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Contributions of Social Sciences to Multiple-Use Management: An Update



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Abstract

The papers in this GTR are revised versions of ones presented at the 1987 National Convention of the Society of American Foresters which had the theme of Economic and Social Development: A Role for Forestry and Forestry Professionals. Within that theme, experts representing different social science disciplines were requested to document specific uses of social science knowledge and methodology in integrating amenity resource values into multiple-use management of forest lands and/or to raise questions/challenges for such functionally integrated management.

Holmes Rolston, III begins the report with a call for professional foresters to be more attentive to the "soft" but "deep" and important amenity values. John Hunt urges greater understanding of resource-based tourism. Schreyer and Driver point out that not only do forest policymakers and managers need information on the economic value of amenity goods and services; they also must understand how the use of those goods and services improve or benefit individuals, groups, and society at large. Long, Purdue, and Allen report on different attitudes about resource-based tourism and quality of community life by residents of areas within/near national forests and those away from such. Walsh explains why tests of economic efficiency through benefit-cost analyses are needed, and he reviews the considerable recent progress on estimating not only the economic worth of amenity goods and services to the on-site users but also to the "appreciative" off-site users who value the existence of those resources. Watson and Cordell then describe the important contributions of amenity goods and services to local/regional income and employment, and they describe the data needed to track these impacts. Reid and Floyd take a historical perspective and compare the Outdoor Recreation Resources Review Commission of the early 1960s with the President's Commission on Americans Outdoors (PCOA) of the late 1980s. They suggest how professional foresters can help implement the recommendations of the PCOA's report. Wargo closes the report with a critique of how well the USDA Forest Service has achieved truly functionally integrated planning and management under recent legislation mandating such. He offers recommendations for improvement.

The report does not attempt to document comprehensively the role of the various social sciences and their many sub-disciplines in assuring better integration of amenity resource values into forest land planning and management. Instead, it offers updated "snapshots" of how specific areas of social science expertise have helped and can help accomplish that goal.

Contributions of Social Sciences to Multiple-Use Management: An Update

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Contents

Page

Amenities in Multiple-Use Management: An Update of Contributions by Social Scientists

B. L. Driver 1

Values Deep in the Woods: The Hard-to-Measure Benefits of Forest Preservation

Holmes Rolston, III 6

The Benefits of Wildland Recreation Participation: What We Know and Where We Need To Go

Richard Schreyer and B. L. Driver 20

The Significance of Resource-Based Tourism

John D. Hunt 36

Impacts of Resource-Based Tourism on Local Income and Employment

Alan E. Watson and H. Ken Cordell 46

Rural Resident Community Life Satisfaction and Tourism Development Attitudes: A Comparison of Forest and Nonforest Community Residents

Patrick T. Long, Richard R. Perdue, and Lawrence R. Allen 57

Economic Benefits of Wildland Recreation and Environmental Protection

Richard G. Walsh 76

Implementation of the Recommendations of the President's Commission on Americans Outdoors

Leslie M. Reid and Myron F. Floyd 92

Science, Values, Control and Equity: Foundations of Multiple Use Resource Policy

John Wargo 108

Amenities in Multiple-Use Management: An Update of Contributions by Social Scientists

B. L. Driver¹

Introduction

Before arrival of the Caucasian settlers, the American Indians obtained a variety of goods and services from wildlands including food, shelter, clothes, implements for hunting and other uses, and spatial/physical defenses from enemies. Although they made multiple uses of the wildlands, the native Americans practiced little multiple-use management. That concept of management grew in prominence only after our nation's natural resources changed from being relatively free to relatively scarce in terms of the variety and magnitude of competing uses.

Currently, multiple-use management applies to practically all privately and publicly owned wildlands; there are few acres that are managed for a single use, whether in designated wilderness, national parks, or an industrial forest. Most areas serve as watersheds and produce fish and game while providing other resource-based products.

Given the long history and broad practice of realizing multiple uses from wildlands, the issue then is not whether multiple-use management will or will not be practiced. Instead, the tough questions relate to which uses will be emphasized and how? For a variety of reasons it has been especially difficult to integrate and balance the amenity uses with the so-called commodity uses associated with these wildland products (timber, ore, cattle) sold in reasonably competitive markets.

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Viewed narrowly, the amenity goods and services include those produced from the management of wildlife, fishing, and outdoor recreation resources. More broadly conceived, as in this volume, wildland amenities include designated wilderness and other protected ecological reserves, cultural historic sites, and air visibility. Thus, amenity resources go beyond those maintained for outdoor recreation to those that are protected to promote values related to wise stewardship, appreciation of cultural heritages (e.g., Mesa Verda), spiritual development, and respect for the "rights" of plant and animal species to live and survive. Much environmental legislation has been passed in the United States since 1960 to protect these values. Included are the 1960 Multiple-Use and Sustained Yield Act, 1964 Wilderness Preservation System Act, 1969 Environmental Policy Act, several clean air and clean river acts, the 1975 National Forest Management Act, and the 1976 Federal Land Management and Policy Act.

Two basic problems have deterred meeting the intentions of these acts. One, institutional inertia, has caused the public land management agencies to be slow in changing their orientations away from past practices, such as primary emphasis on timber production or mineral development. The other, and probably more significant, problem is the less tangible nature of the amenity goods and services. Included are difficulties in identifying/specifying the amenity goods and services, estimating demand, inventorying supply potential, development of managerial objectives, designing prescriptions and standards to guide management, and valuation of the amenity goods and services. In contrast, precedents exist for managing to provide the "commodity" outputs which are more discrete.

Because of these difficulties, there has been much debate about multiple-use management of public wildlands during the past 20 years. Attention in academic/research institutions has focused on defining the concept of multiple-use management and explaining how it should be applied, development of techniques to estimate the costs and benefits of alternative uses, and design of optimization models such as linear programming. Outside academe, the interest groups have pushed for more consideration of the values they represent. Although interest groups have used some objective inquiry (documentation of contributions of commodities to economic growth, public opinion surveys, and environmental impact assess-

ments), they have relied mostly on application of political pressure to promote their ends. Their arguments have ranged from those of the timber industry extolling the social benefits of harvesting publicly owned timber (e.g., new housing starts, affordability of home ownership) to those of environmental groups about the social costs of "below-cost" timber sales.

Different interests still argue that considerable changes should be made in the practices of the public management agencies. Nevertheless, any objective appraisal indicates that during the past 20 years, those agencies have made considerable progress in comprehensively integrating amenity values into their program and land management planning. This progress becomes more apparent when cognizance is taken of the difficulties mentioned above relating to specifying amenity goods and services, quantifying the demand and supply of such, estimating the benefits and values of these outputs, and integrating measures of these values into the planning process with the measures employed for the nonamenity outputs.

Much of the progress made in practicing multiple-use management can be attributed to increased public awareness of the need for well balanced uses of the nation's public natural resources. This is evidenced by the considerable environmental legislation that has been passed and by the concern about amenity values in the administrative directives and regulations of the land management agencies. Each facilitate legal actions by parties that disagree with particular management actions.

Some of the progress though can be attributed to the contributions of social scientists. Those contributions cover a variety of topics including development of better means for making economic appraisals; improved techniques for conducting social and environmental impact assessments; greater understanding of amenity resource users' motivations, expectations and preferences; and improved planning and management techniques. Certainly, the states of these arts need further improvement, but recent progress has been significant.

The papers presented here update some of the contributions of social scientists to multiple-use management of wildlands. They were presented at the technical sessions of the Recreation Working Group of the Society of American Foresters at the 1987 National Convention of that Society, which had the theme Economic and Social Development: A Role for Forestry and Forestry Professionals. The topics of these eight papers

were selected so the group could stand alone in this volume as a current reference on some of the important ways social scientists contribute to multiple-use management. Each paper was selected to illustrate a particular area of contribution with no intention that all areas would be covered.

The first paper by Rolston summarizes recent thinking in philosophy (on environmental ethics) about different values of wildlands. He offers the perspective that the amenity values, especially those that are viewed as soft, are instead deep, and the forest is where their roots are. Hunt follows with his discussion of past and current attitudes within the forestry profession about resource-based tourism. He points out that because of misinterpretations and other reasons, past attitudes have intended to be negative. He explains why much on-site amenity use is by tourists and discusses future likely trends in tourism. Schreyer and Driver consider why more knowledge is needed about the benefits to individuals and society of amenity goods and services. They emphasize that most of what is known about those benefits is intuitive and inferential. Long, Perdue, and Allen review the results of some of the studies that have attempted to quantify the impacts of public wildland-based amenities on local community satisfaction. Their studies indicate that many rural residents are forming more positive attitudes about tourism and the growing emphasis on amenities in multiple-use management because of the decline in other economic sectors locally.

Walsh explains why economic efficiency analyses are needed and how they can help improve multiple-use management decisions. He reviews the considerable recent progress made by economists in estimating the monetary worth of amenity goods and services, including the economic values determined for some preservation actions. Examples of the magnitude of some of the values are provided. Watson and Cordell follow with a consideration of relationships between amenity resource management and local and regional economic development, measured in terms of increased income and employment. Considerable progress has been made in that area both in improvement in methods and in the data bases.

Reid and Floyd take a different tack and give an overview of the growth in prominence of wildland recreation in America since the Outdoor Recreation Resources Review Commission issued its reports in 1962. Their historical overview leads to a

discussion of why the President's Commission on Americans Outdoors was created and what recreation professionals can do to help implement the recommendations of that Commission. Wargo closes with his explanation of the role planning within the USDA Forest Service has played over time in the allocation of wildland resources to alternative uses and how the nontimber uses have fared. His conclusion is that although much progress has been made toward more balanced management, problems remain because of the diversity of values that exist, the information gap that persists about the amenity uses, and "forced democratization" that has accompanied growth in the number of interest groups now involved in public allocation decision processes.

If nothing else, the reader should come away from this set of papers with the view that the social sciences are now working on many fairly well-defined fronts and with clearer purposes, better methods, and more explicit directions than they were 10 years ago. Evidence of continued contribution is clear.

245

Values Deep in the Woods: The Hard-to-Measure Benefits of Forest Preservation¹

Holmes Rolston, III²

Like the sea or the sky, the forest is a kind of archetype of the foundations of the world. Aboriginally, about 60% of earth's land surface was forested; historically, forests go back 300 to 400 million years. Humans evolved in forests and savannas, in which they once had adaptive fitness. Culture and agriculture supplanted forest life, but traditional cultures often remained in evident encounter with forests, both circumscribed by them and dependent on forest products. In modern cultures, the growth of technology has made the forest increasingly a commodity, decreasingly an archetype.

That transformation results in profound value puzzlements, a cognitive dissonance about "the forest." Civilized, we are not yet out of the woods about values there. Indeed, the triumph of civilization forces the question: What basic values lie in the forest? An evident answer is that humans want the forest as resource for civilization; they conserve it for exploitation. A deeper answer is that humans love the forest for what it aboriginally is; they want to preserve it from exploitation. Why go to the woods? A shallow answer is that frustrated with culture, humans want "to get away from it all." A radical answer is that in probing origins, humans go to get back to it all.

The Forest Primeval

At the archetypal level, the forest is valued because it is primeval. The central "goods" of the biosphere—the elemental forest processes: hydrologic cycles, photosynthesis, soil fertility, food chains, genetic codes, speciation and reproduction, and succession and its resetting—were in place long before

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humans arrived. The dynamics and structures organizing the forest do not come out of the human mind; a wild forest is wholly other than civilization. Confronting an artifact or cultural institution, I penetrate something fabricated or functional on human terms, something socially or personally valued. Confronting a primeval forest I must penetrate spontaneously existing life on its own terms, natural kinds, not goods of my kind. Humans can see and evaluate phenomena outside their own sector of interest, as animals cannot. Humans do this inventing categories with which to discover the world, but such categories, when successful, represent—make present to us—the nonhuman, wild world. The genius of forestry as a pure science helps us to appreciate the biology, ecology, integrity, and dynamic stability of the forest primeval. Foresters get immersed in a noncivil, nonhuman frame of reference. They know the elements, raw and pure.

Applied forestry, making a commodity out of an archetype, is humane and benevolent at risk of prostituting the primeval. The principles reorganizing the managed forest do come out of the human mind; humans no longer see outside their own sector of interest. Seeking goods of their kind, they modify the natural kinds. The managed forest bears the resemblance to a wild forest that a cow does to a deer. Silviculture, like agriculture, is culture superposed on nature. A domesticated forest, like a caged wolf, is something of a contradiction in terms. There remains what used to be a forest or wolf now reduced to something less, converted to something else. Urban forestry must always be a stepchild to pure forestry, just as zoos cannot really contain wildlife. A woodlot cropped for fuel or timber, or a tract of pine planted for paper pulp is not deep woods. The radical values are gone.

The pristine forest, understood by the forester scientifically, can also be understood experientially—and, hence, the wilderness movement. A person is not really deep in the woods without tracts so large that one cannot get out by dark, that one cannot cross on foot without forcing a camp, forests so intact as yet to contain their native flora and fauna, including the large mammals—bears, wolves, cats—with their intolerance of humans and need for great range. No one can go there, of course, without importing the skills and protections of culture; but no one authentically goes there without stepping to the edge of culture, immersing oneself in the majestic primeval.

In the forest itself, there is no time of day; it is not 10:00 a.m. EDT, nor is it Tuesday or July. There are no board-feet of timber, BTU's, meters, miles, or acre feet of water; the lines of latitude and longitude and elevation contours do not really exist. There is no English or German, no literature or conversation. There are no artifacts and labor is fleeting. There is neither capitalism nor socialism, neither democracy nor monarchy, justice nor charity, science nor religion.

There are trees rising toward the sky, birds on the wing and beasts on the run, age after age, impelled by a genetic language almost 2 billion years old. There is struggle and adaptive fitness, energy and evolution inventing fertility and prowess. There is cellulose and photosynthesis, succession and speciation, muscle and fat, nerve and sweat, sight and sound, smell and appetite, law and form, structure and process. There is light and dark, life and death, the mystery of existence.

Values in the Forest

Life Support Value

A forest is a community before it is a commodity; it is objectively a community. Only within the gaze of humans, subjectively, with preferences projected onto it, does it become a commodity. "Forest products" are secondarily lumber, turpentine, paper, and cellophane; the forest "produces" primarily aspen, ferns, warblers, squirrels, and mushrooms. This first order, natural production, precedes and supports any second order, humanistic production.

The forest, primal source, is a place of resources, long before humans arrive. Life is never self-contained but incessantly moves through its environment, ingesting and eliminating it, nutrient source and sink. Rocks attach no value to the environment; rocks by themselves never constitute an ecosystem, a community. But trees must photosynthesize and coyotes must eat. Heterotrophs evidently use resources—for example the wildlife, mobile and on the hunt through the woods—and this is equally true of autotrophs, rooted to the soil. The flora, like the fauna, make resources of soil, air, water, and nutrients; they are no less embedded in the life support cycles. Towering high as they project toward the light, trees feed themselves

(autotrophs); they store energy from sunlight, but in interdependence with, not independence from, the ecosystems in which they occupy niches. Were it not for fungal and bacterial heterotrophs, lowly and inconspicuous, feeding on autotrophic materials, recycling nutrients, trees could not long stand. Each benefits the other in biological community.

A forest is an ecosystem, a home with a contained place for its member species, each with an evolutionary fitness. That the forest is a satisfactory place means first that many species have found life-supporting niches there into which they are well-fitted. This objective satisfaction (=support) of life occurs with or without our human experiences. Something of value seems to be taking place before we arrive to register it. That the forest is later valuable, able on occasion to satisfy human preferences, seems a spin-off from its being valuable, able to satisfy organic needs on its own. The forest supports human life only as and because it is this larger community.

Endangered Species/Endangered Ecosystem Values

There can no longer be found about 500 faunal species and subspecies that have become extinct in the United States since 1600, and only rarely found another 500 species that are (officially or unofficially) threatened and endangered. Even where not nationally in danger, once frequent species are locally extinct or rare. Hardly a stretch of forest in the nation is unimpooverished of its native species—otters and peregrine falcons. The higher up the species in the arboreal trophic pyramid, the more likely this is so.

Species are often endangered because their communities are. Only 2-4% of the American continent is wilderness, and what little remains is often forested. We have only scraps of undisturbed once-common ecosystems, such as hemlock forests, and no chestnut forests at all. Acid rain is impoverishing the Adirondacks and the Great Smokies. Tropical rainforests are being destroyed at the rate of 25-50 acres per minute, annually an area the size of the state of West Virginia or larger.

All this ought not to be. Rather, forests ought be optimally rich in native fauna and flora, in community types, and some forest ecosystems intact enough to support grizzly bears and wolverines. Some pine forests should be left ("overaged" from an applied forester's view) to support red cockaded woodpeck-

ers and Chapman's rhododendron. When we face any proposal that Americans should sacrifice what relict wildlands remain for a little more or cheaper goods like those we already have in abundance (newsprint, timber, power), many conclude that, at both species and system levels, we ought to conserve biotic diversity values. In a recently released study, an Office of Technology Assessment task force recommends that Congress consider an Endangered Ecosystems Act to complement the Endangered Species Act.

These species are national treasures of aesthetic, ecological, educational, historical, recreational, and scientific value to the nation and its people, but also valued because of what they are in themselves. What the forest produces is individuals, but, at a deeper level; what the forest has produced is species. That is a bigger event, and extinction shuts down forever life lines that flowed over the continental landscape long before humans arrived and that might, apart from us (or together with us, were we more sensitive) continue for millennia henceforth. This irreversibly destroys archetypal productive powers.

Natural History Value

A pristine forest is prime natural history, a profound historical museum, a relic of the way the world was for almost forever. The forest, as a tangible preserve in the midst of a culture, contributes to the human sense of duration, antiquity, continuity, and identity. Unlike cultural museums, the forest continues to be what it was, not simply a museum but a living landscape. A visit there regenerates the sense of human late-coming and sensitizes us to our novelty.

The forest is, we first may think, prehistoric; world history begins with empires and armies, nations and kings. The forest is timeless, a place of perpetual return, of cyclic successions; by contrast, civilization progresses century after century. That limited, local, anthropocentric view is transcended by forest history. The evolutionary sciences have made us aware of the depth of such historical change. Though the scope of this exceeds immediate, local experience, the forest visitor educated by environmental interpretation becomes aware of it, realizing the centuries-long scope of forest regeneration, the age of sequoias or great oaks, the interplay of ecology and evolution, erosional, orogenic, and geomorphic processes in rock strata

and canyon walls, glacial moraines, or petrified forests. The Carboniferous Forests were giant club mosses and horsetails; the Jurassic Forests were gymnosperms—conifers, cycads, ginkgoes, and seed ferns. Tertiary Forests, prior to glaciation, contained different species from present forests. Successions in Minnesota 10,000 years ago were different from those taking place this fall. A forest today is yesterday being transformed into tomorrow.

Each forest is unique. Forest types exist only in forestry textbooks; what exists out there in the world is Mount Monadnock, the Dismal Swamp, Tallulah Gorge with its unique colonies of *Trillium persistens*, Mobley Hollow on Sinking Creek. This wealth of detail escapes even pure forestry as a lawlike natural science. Forests with their proper named features and locales—Grandfather Mountain or Chattahoochee National Forest—always exist specifically, never abstractly. Especially when visited by persons with their proper names, the encounter is valued because it yields distinctive, never-repeated stories—the biography of John Muir in the Sierras, Henry David Thoreau at Walden Pond, Aldo Leopold in Wisconsin, or one's own vacation hiking the Appalachian Trail.

Scientific Study Values

At least half of what there is to be known about forests remains yet undiscovered. A major unfinished agenda lies at the ecosystem level. Scientists have worked out the genetic code, worked out how species evolve; but what about the evolution of ecosystems? Successive levels of biological organization have properties that cannot be predicted from simpler levels, and the least known level of organization is that of landscape ecology, the mosaic of communities that compose a watershed, a biome, or a physiographic region, a forest. Do forests inevitably appear, given a suitable moisture and climatic regime? We are not sure why tree line lies at the elevations it does, or why the balds in the southern Appalachians are there. We are beginning to suspect that insect outbreaks convey benefits to a forest, something like those of fires, and of which we were long unaware. How did the relict populations of rare plants get dispersed where they are? How do the nonfruiting mosses get propagated over long distances?

Confronted with the epochs of natural history, there is no more unsettled question than whether there are escalating trends over evolutionary history. Does diversity increase over time? Stability? Do the species at the top of tropic pyramids rise in complexity? In neural power? All this seems to have happened, but why we do not know. Biologists are divided over whether interspecific or intraspecific competition is a minimal or a major force in evolution. Sizeable natural systems are the likeliest places to settle such debates. Large wilderness areas, including forested ones, provide the best and perhaps the only locale for studying the kind of landscape changes and evolutionary history that occurred for millennia in prehuman times. To destroy the primeval forests—such relics of them as remain—is like tearing the last pages out of a book about our past that we hardly yet know how to read.

Aesthetic Values

Like clouds, seashores, and mountains, forests are never ugly; they are only more or less beautiful; the scale runs from zero upward with no negative domain. Destroyed forests can be ugly, whether the cause is natural or human; a burned, windthrown, diseased, or clearcut forest is not scenic. But even the ruined forest, when regenerating itself, has yet positive aesthetic properties; the truncated system of growth presses to return; trees rise to fill the empty place against the sky.

A forest is filled with organisms that are, in various degrees, marred and ragged—oaks with broken limbs, a crushed violet, an insect-eaten leaf, the carcass of an elk, putrid and full of maggots. These are, in a way, ugly things. But the word “forest” (a grander word than “trees” in the plural) enlarges our scope to comprehend the scene; it forces retrospect and prospect; it invites holistic categories of interpretation. The rotting elk returns to the humus, its nutrients recycled; the maggots become flies, which become food for the birds. Fallen giants, decaying on the forest floor, are not debris, trash; they are yesterday’s forest passing into tomorrow.

One has to appreciate what is not evident. Marvelous things are going on in dead wood, underground, in the dark, microscopically, or slowly over time; they are not scenic, but an appreciation of them is aesthetic. The usefulness of a tree is only half over at its death; an old snag or a rotting hulk provides

nesting cavities, perches, insect larvae, food for birds, and nutrients for the soil. Decay and predation are local disvalues to individuals but ecosystemic values.

The gnarled spruce at the edge of the tundra is not really ugly, not unless endurance and strength are ugly; it is presence and symbol of life pushing on before the winds that blast it. Every particular must be experienced, not in framed isolation, but framed by its environment; this softens the ugliness and sets it in somber beauty. Life is ever renewed in the midst of perpetual perishing.

"Wild" is often thought to be a negative predicate, as when we say that a field or a child has gone wild. The wild forest is of disvalue from the perspective of applied forestry; it is a waste that must be brought under human control to be any good to us. But, shifting from a utilitarian reference frame to one of beauty, wild is no term of disvalue. To the contrary, when we come to a forested landscape on its own terms—as pure forestry can help us do—sensitive to stability, integrity, ecosystemic processes, to the miracle of life, wild is always a positive predicate. "Wild" categorizes how life transcends the scope of human will and control.

In one sense, a person needs to be detached to appreciate a forest; to see it for what it is in itself, not as something good for me. One needs to stand apart and overlook it—like a great scenic picture. When breaking out at tree line and turning to look at the forest below, one admires the scene. But there is another sense in which a forest is something in which you must be aesthetically immersed; a forest surrounds you and runs right up to your feet. You smell the spruce, hear the wind, cast a wary eye toward a gathering storm. There is a sense of abyss and presence, an experiential depth not found when, in culture—outside the frames or in the audience—one looks at a painting or watches a play.

In the primeval forest, humans know the most authentic of wilderness emotions, the sense of the sublime. By contrast, few persons get goose pimples indoors, in art museums, at the city park, or downtown. We get transported by forces awful and overpowering, by the signature of time and eternity. We will not be surprised if the quality of such experiences is hard to quantify. The purple mountains' majesties do not measure well on a 1-5 thermometer scale. We measure commodities; but, almost by definition, the sublime runs off scale.

Recreation/Creation Values

The word *recreation* contains the word *creation*. Recreation in the forest, like recreation in town, benefits persons because it re-creates them, rejuvenates them when they are worn from work. But on a deeper analysis, recreation in the forest takes place in the context of creation. Humans leave the built, cultured environment and seek the natural environment. They go outdoors for the repair of what happens indoors, but they also go outdoors because they seek something greater than can be found indoors—contact with the natural certainties. Forests and sky, sunshine and rain, rivers and earth, the everlasting hills, the cycling seasons, wildflowers and wildlife—these are superficially just pleasant scenes in which to recreate. They are the timeless natural givens that support everything else.

Those who recreate here value leisure (watching a sunset, listening to the loons or the rain) in contrast to work for pay; they value being in an environment that they do not have to rebuild or look after, a wild world that runs itself and need not be labored over. They value work (climbing, setting up camp) that is not for pay, an environment with zest, in contrast to a boring or familiar job. They value the Spartan contrasts with city comforts. They value an escape, if you like, but they value also being drawn to roots. They want to know the weather, protected by minimal enough cover and shelter as to leave rain or sun close at hand. They want to submit to the closing day at dusk, to be roused by the rising sun without benefit of clock. They want to know the passing seasons when migrants return or leaves fall, without the benefit of a calendar.

If one insists on the word, these features of the greater outdoors are *resources*, but now it seems inadequate to call them recreational resources. They are the *sources* that define life. People like to recreate in the woods because they are surrounded by something greater than anything they find indoors. They touch base with something missing on baseball diamonds and at bowling alleys. They value recreation in the grandeur of creation. Encounter with creation re-creates.

Character-Building Values

The challenge of self-competence, in teamwork or alone, is valued together with reflection over skills acquired and one's

place in the world. The forest provides a place to sweat, to push oneself more than usual, to be more on the alert, perhaps to let the adrenaline flow. The forest is a place to take calculated risks, to learn the luck of the weather, to lose and find one's way, to reminisce over success and failure. The forest teaches one to care about his or her physical condition. One is getting cold, hungry, or tired. Forests do not care; they are very unforgiving of mistakes; one really is on his own, forced to steady personal integration against the disordering tendencies of the woods. Forests demand self-reliance and produce a sense of humility and proportion. Sometimes we go there not to change the forest but to be changed by it.

Character cannot be built in the forest alone. Vital complexities and strengths of character must be forged in society and interpersonal relations. But in culture, one wrestles with a social self, a role to be played, status to be gained, a reputation estimated and reflected by others; in the forest one has no role or status, the self is starkly present without pretense. Alone or with a few friends, the protocol is simpler; nobody is much or long deceived, nobody much has to be pleased. Accomplishment and failure are evident. One is free to be himself or herself, forced to a penetrating sincerity.

It is no accident that many organizations that seek to form character use wildlands—Boy and Girl Scouts, Outward Bound, the National Outdoor Leadership School, and church camps. Similar growth occurs in individuals independently of formal organizations.

It is no accident that forestry as a profession has a powerfully positive image; we do not expect a forester to be a sissy, lazy, inept, complaining, naive, arrogant—certainly not one regularly in the field. In contrast perhaps to the wilderness enthusiast, romantic and cock-eyed, we expect the seasoned forester to be down to earth and practical, on the level and resourceful. Professional life and personal life overlap, and the probabilities are that a forester is genuine, competent, experienced, patient, and wary. When we discover that a forester, whatever his or her applied concerns, also has an admiring respect for the woods running beneath (a romantic streak after all), we have yet the more evidence of character.

Nonhuman Intrinsic Values

Surrounded by politicians, philosophers, economists, and technicians, even by other foresters at business (surrounded by the rebuilt environments of culture), one gets lured into an artificial anthropocentrism: value enters, exists, and exits with human preference satisfactions. Nothing counts until humans count it. Nonhuman biological events are value neutral, merely functional. Surrounded by the forest, the anthropic conclusion seems superficial, a deeper conclusion irresistible. The forest is value-laden.

Trees use water and sunshine, insects resourcefully tap the energy that trees have fixed by photosynthesis, warblers search out insect protein, and falcons search for warblers. Apart from any human presence, organisms use other organisms and abiotic resources instrumentally. In a forest, such phenomena are evidently biologically vital. These food chains are forms of value capture. Value capture and transformation propel the ecosystem. Resource use is an archetype, an axiom of life, an axis around which the forest turns, in which humans too must participate; and now any value theory (axiology) seems arrogant, even silly, to insist that all value rotates around human preferences.

Continuing this deeper logic, organisms value the resources they use instrumentally because they value something intrinsically: their own lives, their form of life. No warbler eats insects in order to become food for a falcon; the warbler defends her own life as an end in itself and makes more warblers as she can. A warbler is not "for" anything else; a warbler is for herself. From the perspective of a warbler, being a warbler is a good thing; a blackpoll tries to be good-of-its-kind. A life is defended intrinsically, without further contributory reference, unless to defend the species and that still is to defend a form of life as an end in itself. Such defenses go on whether or not humans are present. Thus, both instrumental and intrinsic values are objectively present in the forest. The forest is a system where loci of intrinsic value are meshed in a network of instrumental value.

Biological conservation in the deepest sense is not something that originates in the human mind, is modeled by Forplan programs, or written into Acts of Congress. Biological conservation is innate as every organism conserves its life.

Nonconservation is death. From this more objective viewpoint, there is something subjective and naive (however sophisticated one's technology) about living in a reference frame where one species takes itself as absolute and values everything else in nature relative to its utility.

That, a biologist may insist, is just what goes on in the woods; warblers take a warbler-centric point of view, spruce push only to make more spruce. But no nonhuman organism has the cognitive power, much less the conscience, to lift itself outside of its own sector and evaluate the whole. Humans are the only species who can see the forest for what it is in itself, objectively, a tapestry of interwoven values. An anthropocentric value system has not gotten out of the woods, in one sense; in another sense, it has not yet gotten into the woods.

Forestry ought to be one profession that knows better, that sees further, that gets rescued from this beguiling anthropocentrism through its daily contact with the primeval givens. In one sense, foresters ought to liberate us from a narrow humanism, from putting ourselves at the center; in another sense, foresters ought to help us gain fuller humanity by transcending merely human interests and helping us to conserve a value-laden world. Scientific forestry is an empirical and theoretical study of forests; philosophical forestry goes further to reform human character in encounter with natural history.

Religious Experience Value

"The groves were God's first temples" (Bryant, "A Forest Hymn"). A forest is a church as surely as a commodity. Trees piece the sky like cathedral spires. Light filters down, as through stained glass. In common with churches forests (as do sea and sky) invite transcending the human world and experiencing a comprehensive, embracing realm. Forests can serve as a more provocative, perennial sign of this than many of the traditional, often outworn, symbols devised by the churches. Mountaintop experiences, the wind in the pines, a howling rainstorm, a quiet snowfall, solitude in a sequoia grove, an overflight of honking geese, the forest vista that begins at one's feet and disappears over the horizon—these generate experiences of "a motion and spirit that impels...and rolls through all things" (Wordsworth, "Lines above Tintern Ab-

bey"). We feel life's transient beauty sustained over chaos. There is a music to it all, and not the least when in a minor key.

A forest wilderness is a sacred space. There we recognize God's creation, the Ultimate Reality, or a Nature sacred in itself. I become astonished that the forest should be there, spontaneously generated and regenerated on its own, astonished that I should be there, immersed in it and struggling to come to terms with it. There are no forests on Mars or Saturn; none elsewhere in our solar system, perhaps none elsewhere in our galaxy. But Earth's forests are indisputably here. There is more operational organization, more genetic history, more of interest going on in a handful of forest humus than in the rest of the universe, so far as we know. How so? Why? A forest wilderness elicits cosmic questions, differently from town.

If we must put it so, the forest is a religious resource, as well as a scientific, recreational, aesthetic, or economic one. But now it seems to profane such experiences and nature alike to see a forest as merely instrumental to human satisfactions and otherwise devoid of value. The forest is a wonderland, a miracle, standing on its own. No doubt humans bring to it the experience of wonder; we do not believe that trees or even animals have the capacity for wonder. But what we are evaluating is objectively a wonderland; the human experience is generated in the presence of something worthy enough to induce it. The forest is presence and sacrament of ultimate sources. Being among the archetypes, the forest is about as near to ultimacy as we can come in the phenomenal world, a vast scene of sprouting, budding, flowering, fruiting, passing away, and passing life on.

Deep Values

Such values are, it is commonly said, "soft" beside the "hard" values of commerce. They are vague, philosophical, subjective, impossible to quantify, argue for, or demonstrate. Perhaps; but it does not follow that such values are not real, either unreal in human experience or unreal in the forest. What is really meant is that such values lie deep. The forest is where the "roots" are, where life rises from the ground. A wild forest is, after all, something objectively there—there without benefit

of human subjectivity. Beside it, culture with its artifacts is a tissue of subjective preference satisfactions.

Money, often thought the hardest of values, is nothing in the wilderness; it is mere cultural convention. A dollar bill has value only intersubjectively; any who doubt this ought to try to spend one in the woods. Alleged to have so much objectivity, dollar values have, in the primeval forest (and therefore in pure forestry), no significance at all.

What then is objectively significant in the primeval forest? The phenomenon of forests is so widespread, persistent, and diverse, appearing almost wherever moisture and climatic conditions permit it, that forests cannot be accidents or anomalies but rather must be a characteristic, systemic expression of the creative process. Forests are primarily an objective sign of the ultimate sources, and only secondarily, following the arrival of human preferences, do they become managed resources. The measure with which forestry can be profound is the depth of this conviction.

245 The Benefits of Wildland Recreation Participation: What We Know and Where We Need To Go //

Richard Schreyer and B. L. Driver¹

Abstract.—The benefits of recreation participation are appreciated more intuitively than in terms of tangible empirical support. This becomes more a source of concern as the need for specification of the benefits of all resources grows in order to make complex resource allocation decisions. Traditional indicators of recreation benefit such as economic measures, while helpful, cannot capture the range and depth of such benefits. This paper examines what we know about the nature of recreation benefits and issues related to how we can best measure them. Approaches, such as measuring behavior change following participation, appear to be the most reliable but also the most difficult to do. Most of what we do know comes from studies of recreationists who report on their own perceived benefits. While much information exists, there are questions concerning the ability of people to articulate actual benefits effectively. Examples of the types of information on benefits learned from previous research are given.

Several recent papers have pointed out why better information about how and how much people benefit from recreation participation would help improve natural resource policy and management decisions (Driver 1987; Driver et al. 1987; Driver and Burch, 1988; Schreyer and Driver, 1989). Those papers describe the difference between monetary and nonmonetary measures of recreation benefits. Walsh (this volume) describes results of some of the monetary measures. This paper is concerned with nonmonetary measures, or with how people or society changes for the better.

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Non-Commodity Values and Models of Resource Decisionmaking

Cultural Evolution and Wildlands

There is irony in the attempt to document empirically how individuals or society benefits from outdoor recreation. The irony lies in the fact that the scientific community is essentially trying to quantify something and put it into a form that fits ongoing models of resource decisionmaking, while the management community tends to appreciate the benefits of recreation intuitively. Of course, identification and quantification of the benefits of recreation participation would help advance leisure theory. From an applied perspective though, the fundamental rationale lies in the attempt to incorporate non-commodity values into decisionmaking about public lands. While this effort is no doubt tremendously important, there is also the need to avoid the trap of the Procrustean bed.

Recreation has been cast as a *resource use*, as opposed to a way of thinking about these lands. The significance of what is happening in recreation is a reflection of the struggle our country is engaged in, seeking to transform its understanding of its relationship to the environment. As an urban culture, we are beginning to be aware of the impacts of our "hi tech" culture on our well being. We know rationally that we need access to resources, that we will use lands for the production of goods and services. However, we also see a growing value in *having wildlands*. There is a sense that the places "out there" are remnants. The places where wildlands exist in abundance are places that are remote, unpopulated, and, in many ways, unknown. But functionally, they are part of a larger picture. They represent a symbolic connectedness, a belief that we *should* be a part of a larger biosphere. This philosophy, while not actually being articulated in such a direct sense, is functionally manifested in our culture in such behaviors as wilderness advocacy, the passage of the Rare and Endangered Species Act, the person who finds a special significance in the annual deer hunt, and in the development of urban wildlife programs. There is an inherent conflict when these less utilitarian values confront traditional models of resource management. We are

essentially dealing with a "guilty until proven innocent" syndrome. By this we mean that resource managers are willing to accommodate those value expressions, but only within the parameters of the "rational" planning and management models.

The fundamental rationale for our resource models lies in turn-of-the-century philosophies of scientific rationality being maximized through Weberian principles of dispassionate, efficient, organizational structures. Fairness has been the underlying dynamic. This fairness in a system of competing demands and values has been transformed into the need for common metrics of trade-off. This leads to the need to quantify every aspect of human endeavor, including the nature of human consciousness.

The logical flaw centers around the belief that the implied fairness of quantification can capture the domain of human experience. Of course, if that were ultimately true, there would be no Senate and House of Representatives. However, our bureaucratic models require that conflicting demands for resource uses be resolved in a "fair" way. Unfortunately, the fair way will not adequately represent the values which appear to be causing increasing stress in the system.

The Value of Recreation

Resource decisions need to be made through comparisons of relative value. We have no doubt of the value of recreation to people. It is just that those values are not expressed in comparable ways. For instance, Hunt (this volume) indicated that Americans spent \$275 billion on travel and tourism in 1986. A study by the U.S. Travel Data Center (1987) showed that tourism generated \$2 billion in income for the state of Utah, and produced 47,000 jobs. In a financially struggling state, this is a powerful contribution to economic well-being and development. However, we cannot transfer such values to the land base as easily as we can with units of commodity production. Publicly provided recreation is at a disadvantage because we are limited in our ability to charge for it.

The above observations refer specifically to recreation participation and do not account for the preservation or existence value described previously. This represents a double bind. Managers bemoan the amount of energy they must devote to

the political and value dimensions in making decisions in response to non-commodity demands. However, they also cannot put much publicly provided recreation in the market sector, where trade-offs might then be seen as more "rational"—recognizing, of course, that some non-commodity values, such as maintenance of species diversity, may have little or no translation to market signals.

The Search for Benefits

We must look for ways of better expressing the amenity values of wildlands. One way is to systematically document the benefits of recreation participation and other non-commodity uses of natural resources. The peculiar challenge is how to document something that represents a state of mind or an intangible value. The benefits of recreation may be expressed in a variety of ways. A benefit may be defined most directly as an improved condition or desired change in state, or the prevention of a worse condition (Driver and Peterson 1987).

The range of benefit could be extremely wide, from physiological benefits to improved states of mind (Driver et al. 1987). It could encompass societal benefits (Driver and Brown 1987), as well as other spin-off benefits (Driver and Rosenthal 1982). It could also include non-human benefits, such as the benefits derived from preserving natural ecosystems (Rolston 1985). In its most generic sense, the concept of benefit may be represented as the fulfillment of human needs (Tinsley and Tinsley 1988). This underscores the fact that benefits are not produced by natural resources, so much as they allow humans to attain the benefits they deem appropriate in the context of behaving in and/or relating to the environment.

What determines whether something is a benefit or not? Many factors may affect this. Consider the time element. Smoking may be a benefit in the short run, but a cost in the long run. Who is to interpret what is a benefit? Your reading "Playboy" may be a benefit to you, but an example of destructive behavior to me. How do we interpret benefits to one person that represent costs to another, such as the damming of a free-flowing river? These concerns suggest that there need to be more formally defined criteria for the identification and measurement of benefits.

The Measurement of Benefits

To measure benefits, we must examine the separate components. First, we must be able to identify what the benefits of recreation participation are. Then, we must be able to measure the magnitude of those benefits. That is, how much benefit is produced by a given amount and type of participation. Of course, this will be primarily a function of the individual, as opposed to the recreation opportunity itself, but those types of relationships are the topics of future research. Finally, we need to measure the value of that particular benefit to the individual. How much was that increment of benefit worth (Peterson et al., 1990; Schreyer 1984)?

Currently, most research is directed at identifying and documenting benefits, with some consideration for measuring their magnitude. Schreyer and Driver (1989) identify a number of these approaches. One source of identification is to survey experts familiar with the field of recreation, to draw on their personal experience. There have been few attempts at such systematic identification. One example is the group process described by Schreyer and Driver (1989). Such "Delphi" techniques are helpful in guiding research, but must ultimately be validated through more systematic means.

Another approach is to ask people about their perceptions of benefit. However, this does not guarantee that people will make accurate perceptions. I may claim that jogging is a health benefit when, in reality, it is ruining my knees and putting undue stress on my heart. However, in large part, we also create our own realities. If we believe something to be a benefit, then it may functionally serve that purpose for us. I may claim that smoking increases my virility. In an "objective test" to confirm that, you may conclude that, in fact, my testosterone level is reduced by nicotine. However, if I believe that benefit to be the case, then I may engage in sexual behavior more frequently than would be the case otherwise; in a sense, my perception has, in fact, created the reality of the benefit. This is particularly the case for experiential benefits, which may have no objective or behavioral referent.

Benefits may be measured in this way by asking people directly what they perceive the benefits of participation to be. There have, as yet, been few studies that approach this directly. Another way to get at such benefits is to make infer-

ences about benefits using the results of previous studies which have attempted to tap visitors' reasons for participation. Since, as we have noted, benefits generically represent need fulfillment, then studies which focus on needs, motivations, etc., can lend some insight into the nature of those benefits.

Such studies have been relatively numerous. Driver and Brown (1987) summarize the results of over 100 such studies, involving over 100,000 recreationists. This data base will be used subsequently as an example of benefit specification. There are a number of recent papers that review the existing literature on the benefits of recreation and wilderness (Brown 1981, Driver 1987, Driver and Brown 1987, Driver et al. 1987, Driver and Peterson 1987, Kelly 1981).

Perhaps the most objective way to measure benefits is to study changes in behavior resulting from recreation participation. These could include physiological measures of a person's health, as well as general population indicators, such as health statistics, mortality rates, absenteeism, divorce rates, etc. Because of the difficulty in carrying out such research, few such studies exist (Driver 1987).

Empirical Benefit Specification

As an example of the nature of benefit specification, we will describe two attempts to identify benefits through indirect analysis of the reasons people participate in recreation. As mentioned above, inferences of benefit may be made through examining research on people's reasons for participation. Two approaches to that analysis are reported here. The first involves the interpretation of results from studies using standardized psychometric scales to measure reasons for participation. Perhaps the most widely used scales of this nature in recreation are the Recreation Experience Preference scales developed by Driver (1977) and his associates. The second method involves the interpretation of open-ended interview data, in which inferences about benefits are derived.

Psychometric Scales

The paper cited above by Driver and Brown (1987) identifies a list of personal benefits of recreation as a distillation of the

results from a large body of research that employed psychometric scales, especially the Recreation Experience Preference Scales. They listed only benefits that connoted improved or desired states and purposefully left out some probable beneficial states that were either more causative of a subsequent benefit (e.g., skill development) or were more abstract (e.g., realization of solitude). Their list is shown in table 1. It represents a subjective judgment; however, it is drawn from years of experience with these data.

The benefits are listed as personal benefits. That is, they are benefits that the individual receives. Many other types of benefits may derive from recreation participation and non-commodity resource uses that are realized at the group, community, and national levels. Examples would be a more productive workforce, a greater sense of shared values and harmony, and a healthier natural ecosystem (Driver et al. 1987).

Driver and Brown identify eight major categories of benefit. The most complex has to do with self-development. As a

Table 1.—A taxonomy of some probable personal benefits gained from use of outdoor recreation opportunities, developed by Driver and Brown (1987).

- A. Personal development
 - 1. Self-concept
 - 2. Self-actualization
 - 3. Self-reliance
 - 4. Value clarification/introspection
 - 5. Humility
 - 6. Leadership
 - 7. Spiritual growth
 - 8. Aesthetic enhancement
 - 9. Learning
 - B. Social bonding
 - 1. Family kinship
 - 2. Kinship with significant others
 - 3. Meeting new people
 - C. Therapeutic/healing
 - 1. Clinical problems (drug abuse, etc.)
 - 2. Stress/tension mediation
 - 3. Physical rest
 - D. Physical fitness/health
 - E. Stimulation
 - F. Independence/freedom
 - G. Nostalgic
 - H. Commodity-related
-

manifestation of personal expression, recreation has the capacity to serve as a vehicle for self-definition and personal growth. Schreyer et al. (1988) illustrate the multiplicity of ways in which natural environments can maintain and enhance one's self-concept. There is the possibility that other categories could be expanded, depending upon the level of analysis desired. Commodity related benefits have to do with benefits linked to benefits to other resource uses that result from management for recreational opportunities (Driver and Brown 1987).

Open-Ended Responses

One of the costs of developing psychometric scales is that the scales are fixed. Responses can only be made in the context of the questions that have been asked. Of course, through time, formats for questions may be modified, improved, and expanded. However, when exploring a new area of inquiry, there is often a value in attempting to be more flexible, seeking to find insights in more unstructured ways of gathering data. The perspective of naturalistic inquiry seeks to understand the perceptions of people in order to develop a richer and more accurate picture of how people themselves perceive such phenomena (Lincoln and Guba 1985). While such information is obviously much more subjective, it allows for data about subjective phenomena and, thus, may be very useful in characterizing such elements.

To assess the utility of this qualitative information for making contributions to the understanding of benefits, an analysis was carried out on a data set involving recreationists on rivers in the East. During the summer of 1986, visitors to the Upper Delaware Scenic and Recreational River in New York State, and the Delaware Water Gap National Recreation Area, between New Jersey and Pennsylvania, were surveyed in an open-ended interview. Both areas are administered by the National Park Service.

The purpose of the survey was to better understand the nature of the recreation experience. Questions were directed toward how the person felt, what he/she perceived, and what the reasons for participation were. Specific questions concerning recreation benefits were not asked. However, the general line of questioning was such that benefit-related information would likely be obtained. Thus, the data were content-ana-

lyzed in order to see what types of information concerning benefit specification could be derived. One hundred eighty-nine interviews were analyzed. The sample is not intended to be absolutely representative of the users of the area, so much as it is intended to identify the range of benefits that might be derived from visiting these areas. The typology of benefits identified by Driver and Brown was used as a framework for benefit specification.

Table 2 shows the benefits identified based on analysis of these interviews. It also shows the frequency with which a certain benefit was named. Obviously, the classification involved judgment concerning the identification of benefits. Naturalistic research is intended to elaborate and suggest, rather than to document empirically. Further, the classification involves an expansion of the Driver and Brown typology. In this sense, we cannot claim that these results have no empirical substantiation beyond the limits of this exercise.

Perhaps the most significant point to note is the tremendous range in diversity of the benefits identified. Within these two environments, and within a relatively narrow range of activities (primarily canoeing and fishing), virtually all of Driver and Brown's categories were mentioned. Further, a number of new categories were added to the list. Obviously, such additions represent subjective decisions about categorization, because some of the categories listed could be subsumed by the more general benefit themes given by Driver and Brown. However, the richness of the information provided in the interviews supported this effort.

Table 2 shows the relative frequency with which specific benefits were mentioned, as well as an overall summary for the major categories. The first category, personal development, was identified as a benefit on one-fourth of all the interviews. This type of a survey is not geared toward assessing the relative importance of these benefits to the person. However, that degree of frequency is notable in itself. Previous studies have tended to indicate that self-fulfillment motives, while prevalent, were not particularly rated as important compared to more commonly pursued outcomes. However, they are reasons for participation that are widely shared.

The social element of recreation is one of the most consistently important benefits recognized. This is reflected in this sample, where 57% of the respondents identified social mo-

Table 2.—Benefits from recreation participation deriving from interviews with respondents at the Delaware Water Gap National Recreation Area and Upper Delaware Scenic and Recreational Rivers.

Benefit categories	No. of times mentioned	Percent of total sample ³
A. Personal development ¹	48	25.4
1. Self-concept	4	2.1
2. Self-actualization	0	0.0
3. Self-reliance	1	0.5
4. Value clarification/introspection	4	2.1
5. Humility	0	0.0
6. Leadership	3	1.6
7. Spiritual growth	3	1.6
8. Aesthetic enhancement	7	3.7
9. Learning	5	2.6
10. Achievement/skill development ²	13	6.9
11. Challenge ²	8	4.2
B. Social bonding	108	57.1
1. Family kinship	28	14.8
2. Kinship with significant others	39	20.6
3. Meeting new people	10	5.3
4. Group solidarity ²	2	1.1
5. To tell others about the experience ²	2	1.1
6. Nurture ²	3	1.6
7. Cultural awareness ²	1	0.5
8. Solitude ²	19	10.1
9. Escape family ²	4	2.1
C. Therapeutic/healing	99	52.4
1. Clinical problems	0	0.0
2. Stress/tension mediation	31	16.4
a. Quiet/peace ²	25	13.2
b. Stress release ²	1	0.5
c. To recharge batteries ²	5	2.6
3. Physical rest/relaxation	68	36.0
D. Physical fitness/health	34	18.0
1. Exercise ²	11	5.8
2. Getting tan/sun ²	23	12.2
E. Stimulation	83	43.9
1. Fun ²	35	18.5
2. Excitement ²	17	9.0
3. Recreation ²	4	2.1
4. Adventure ²	2	1.0
5. Exploration ²	3	1.6
6. General stimulation ²	22	11.6
F. Independence/freedom	8	4.2
G. Nostalgic	7	3.7

(continued)

Table 2.—(continued).

Benefit categories	No. of times mentioned	Percent of total sample³
H. Commodity-related (catch fish)	8	4.2
I. Experiential ²	73	38.6
1. Good time ²	16	8.5
2. Passing time/leisure ²	11	5.8
3. New experience ²	17	9.0
4. Seeing sights ²	3	1.6
5. Pleasure/enjoyment ²	20	10.6
6. Spontaneity ²	4	2.1
7. Fantasy ²	2	1.0
J. Relations with nature ²	116	61.4
1. Enjoyment of nature ²	66	34.9
2. To be outdoors/fresh air/water ²	24	12.7
3. Temperature/good weather ²	8	4.2
4. Scenery ²	14	7.4
5. Relationships with place ²	4	2.1

¹Categories patterned after those developed by Driver and Brown (1987).

²Categories not included by Driver and Brown (1987) in their more restrictive list.

³N = 189.

⁴Category totals represent summations of all subcategories.

tives. We have also added a significant number of subcategories in addition to the previous list. Some of these have to do with anti-social motives (e.g., solitude), but these are very much of the components of the social dimension. Nurturance represents the desire to be supportive to a group and feel good about helping others.

The therapeutic/healing benefit was also mentioned by over one-half of the sample. This has to do with the more classical definition of re-creation, represented by stress release, escape, and relaxation. The "getting tan/getting sun" benefit was difficult to classify. Ostensibly, it has the positive health benefits (and of course more long-term negative health implications) in being "in the outdoors." However, it could just as easily be in the social category, in that getting a tan is primarily slanted toward how one appears to others. But, many of the people describing it also commented on the experiential benefits of laying in the sun, sweating, while listening to the sounds of recreation going on around them.

Stimulation was mentioned by 44% of the sample, suggesting that this a major reason for participation. All of the sub-

categories were added from this sample. While these categories may appear to be very similar, it was apparent from listening to the conversations that they were, in fact, distinct types of stimulation.

A new category was added called "experiential." This had to do with what was going on in the person's mind—that is, how they were feeling. In this sense, it is close to stimulation as a benefit, but not all of the categories are arousal oriented. The key here is to recognize that many benefits of recreation may be experiential, in that the mental states we place ourselves in can be enjoyable, and that enjoyment enhances our quality of life.

The other new category, relations with nature, was mentioned by over 60% of the sample. There are elements here that are tied to other categories, such as escape or experiential benefits; but, there is a significant element in being in nature itself. It is possible to argue whether nature is necessary for human well-being. To the extent that people seek nature and derive satisfaction, the benefits are real. As Schreyer et al. (1988) suggest, such relationships may tie into a broader notion of self-concept by reaffirming individual connectedness to our shared biological heritage. Such symbolic behavior can be forceful, as expressed in patriotic and other community-oriented behaviors.

Discussion and Conclusion

There is a tremendous range and breadth in the diversity of reasons why people choose to engage in outdoor recreation. The results reported here represent a very limited sample of persons engaged in relatively few activities. However, in spontaneous discussions not specifically pointed at benefit identification, they named nearly every benefit category listed by Driver and Brown, as well as a range of other benefits requiring new categories to be developed, including some not covered by the rather comprehensive Recreation Experience Scale.

These attempts at classification may go a long way in the development of a standardized typology of benefit. Systematic research into the magnitude and value of benefits will require this standardization in order to allow for reliable and generalizable findings. This has been a shortcoming that has plagued

the field of leisure research, as standardized measures of psychological values have been relatively rare. This effort at standardizing such a typology should be a topic for future research.

The question still remains: recognizing that these benefits have been identified by recreationists, are they real? The assessment of this will vary with the nature of the benefit. There are two primary ways benefits may be manifested: during recreation participation and subsequent to the participation. Benefits during recreation are primarily experiential; they are states of consciousness that people desire and enjoy. To the extent that people say they experience these benefits, they *are* benefits (assuming the person is being honest and is not deluded).

The second type of benefit comes afterward, as the result of participation. This type may generally be considered in two classes: changes in states of mind and changes in behavior. These two are obviously not distinct, as changes of mind will also many times result in changes in behavior. States of mind could be similar to the experiential rewards described above (e.g., the warm glow of reminiscence) or they could be more long term, such as in an improved self-concept. The linkage of these to recreation would again depend upon the self report of the respondent, although such perceived linkage would not necessarily be subjected to serious questions if the person experiences them as such. As mentioned above, they may create their own reality.

Behavioral changes may be very diverse and wide ranging. They may be long term and subtle. They may also be the most difficult to track. While most objective in the long run, they pose many research problems, as we noted previously. It is likely that much more progress may be made in the short run by studying perceptions of benefit, although research on recreation-related changes in behavior certainly needs to be pursued, including research using physiological measures.

As indicated in the above discussion, there are many needs for research in the future. There should be a more systematic attempt to develop a standardized typology of benefit that reflects its psychological structure. There needs to be more of a focus on objective measures of benefit, such as behavior changes. Better controls on data are needed to establish a better sense of cause and effect. There is a need to move from the

identification of benefit to the determination of the magnitude of benefit, that is, how much of a particular benefit is being provided to the individual. Then the relative worth, or value assigned, of these benefits (or the goods and services that produce them) needs to be estimated better (see Walsh, this volume).

To the extent that our concern for better understanding the nature of recreation benefits represents a desire to improve the quality of recreation resource management, we also need to establish links between settings and benefits. What types of recreation environments and what conditions in them facilitate the attainment of certain benefits and which hinder them? Finally, we also need to think in terms of building a broader body of knowledge in carrying out a range of research. This may help to establish patterns which may lead to future theory building and the development of future hypotheses (Driver et al. 1987). The need for more refined theory cannot be overstated. As Burch (1987) has noted, we often find ourselves sitting on a mountain of data with a pimple of theory.

No one doubts the existence of recreation benefits. However, for them to rightfully impact resource allocation and management processes, they must be more systematically documented. To do otherwise would be to do disservice to the American people.

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245

The Significance of Resource-Based Tourism //

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Tourism, as an economic and social activity, is relatively young. Although people have traveled for thousands of years for a variety of purposes, tourism, as we know it today, is a post-World War II phenomenon. It was not until after the war that a large middle-class emerged in the United States and other countries with the desire and means to travel. As the number of travelers increased a variety of opportunities and problems resulted. The travelers' need for lodging, food, and other services has spawned a large business opportunity and economic impact. In many cases, the desire to see and experience natural, historical, and cultural attractions has promoted a revitalization and protection of many resources. At the same time, large volumes of visitors have created a variety of social and environmental impacts challenging resource managers and community leaders. Conflict over resource use and preservation has, in part, been fueled by the growth in recreation and travel.

Tourism Comes of Age in the 1980's

While tourism has experienced a variety of growing pains over the past 40 years and is yet to be completely accepted as a credible social and economic activity, it is clearly coming of age in the 1980's. To most Americans and many other people of the world, the opportunity to travel for personal enrichment and revitalization is becoming a significant ingredient of a quality life style. Although the opportunity to travel may be perceived as a luxury of an affluent society, there is growing evidence that its relative priority for the use of discretionary time and income is increasing. Short of major world and national economic decline, environmental catastrophe, or politi-

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cal confrontation, personal travel will undoubtedly continue to increase.

Tourism as an industry and economic development activity has grown dramatically in the past 40 years. In 1986, Americans and foreign visitors spent more than \$275 billion on trips of 100 miles or more from home in the United States. Billions of more dollars were spent on short-haul leisure and recreation trips. Tourism represents the third largest retail activity in the United States and ranks among the top three employers in four out of five states.

Tourism is forecast to be the largest business activity in the world by the turn of the century. Tourism is dependent upon growth in Gross National Product and increases in disposable income. Today, nearly 90% of the world travel market comes from 25% of the world's countries that have reached developed or newly industrialized status. Some forecasters have estimated that 50% to 60% of the world's countries will reach industrialized status by the turn of the century, resulting in a doubling of the world's travel market.

Over the past 10 years, many traditional and established industries and business activities have experienced significant changes and, in some cases, major decline. At the same time other industries, particularly in high technology and the services, have remained stable or grown. Among the latter group of activities are the services critical to supporting travel. Although the growth rate in tourism has slowed in recent years and has not experienced the rates characteristic of the 1960's and 1970's, its relative importance in the economic activity of many states has increased dramatically. It was during the early 1980's that many state and community leaders began to recognize the value of tourism. While other industries faltered or declined during the recession of the first half of this decade, tourism remained relatively stable or experienced only minor declines.

Resource Managers Discover Tourism

As community and political leaders have recognized the importance and value of tourism, increasing numbers of resource managers and agencies have also begun to recognize or admit that they too have a role in tourism. While many resource

managers long ago recognized their role in providing recreational opportunities to visitors, there has been a strong resistance or ambivalence to tourism. Some resource managers have even expressed strong negative attitudes about tourism. In the mid-1970's, when the U.S. Senate was conducting the National Tourism Policy Study, which eventually led to the creation of the National Tourism Policy Act in 1981, the National Park Service leadership was quoted as saying it had little or no involvement in tourism and, in fact, one of the former leaders argued that where tourism is concerned, the "public has been ripped off" (U.S. Senate, Committee on Commerce, Science, and Transportation, 1978, p. 11). Although this attitude remains characteristic of some Park Service managers, the National Park Service has to be considered one of the major suppliers of tourism attractions and benefits in the nation.

During the same study, a leader of the now defunct Bureau of Outdoor Recreation, an agency responsible for planning and financing a great deal of recreation opportunity during the 1960's and 1970's said, "I can't visualize any interaction with tourism in the Bureau's past activities and stated emphatically that it is not part of the Bureau's mandate" (p. 11). The authors of the study report reacted to this statement by noting, "this is said in spite of the fact that the vast majority of outdoor recreation areas are utilized almost entirely by 'tourists' traveling out of their home communities to use such public recreation areas and facilities" (p. 11). Fortunately, today most Park Service and other resource managers are recognizing their role in tourism.

Ironically, most resource-based recreation of the past, as well as today, was generated by tourists. While resource managers chose not to call recreation users or visitors tourists, most of their visitors fit the conventional definition of a tourist. While there are many different operational definitions of tourists, such as that used by the U.S. Travel Data Center, which measures only the activity of people traveling 100 miles from home or more or staying overnight, the accepted conceptual definition is people traveling away from their home community for any purpose other than commuting to or from work or school. Obviously, most recreational use of natural resource lands has been by people traveling away from their home community.

Another quote from the National Tourism Policy Study report (p. 11) supports this contention:

In a hearing before the Subcommittee on Parks and Recreation of the U.S. Senate Committee on Interior and Insular Affairs, Senator Harrison A. Williams (NJ) stated: "Today, seven of every ten Americans live in relatively few large metropolitan areas—on 1.5 percent of our Nation's land area, while only 3 percent of our public recreation lands are within 1 hour's driving time from the center of the major metropolitan areas." From this statement it is clear that the remaining 97 percent of our public lands are utilized almost entirely by tourists in the sense that nearly all of the persons utilizing these recreational lands must travel from their homes to do so.

Thus, "a rose is a rose, and by any other name would smell as sweet."

Negative Images and Narrow Definitions of Tourism

Much of the negative or ambivalent attitude toward tourism expressed by resource managers in the past probably stemmed from either attaching different connotative meanings to the word tourist or tourism or defining tourism very narrowly. A discussion of this problem is found in the National Tourism Policy Study Final Report (p. 10-12). Parts of this discussion seem worth repeating here:

...tourism...may connote a number of different meanings to different people, including pleasure versus business, sightseeing, adventure, economic opportunity, leisure, change, relaxation, education and expansion of horizons, as well as congestion, exploitation, energy consumption, pollution, litter, high prices, and overdevelopment. Tourism, in particular, however, tends to have polarized connotations for many, among both the general public and government officials.

A classic example deals with the terms used to denote persons who travel. While words like "traveler," "visitor," "passenger," and "guest" may connote indifferent, acceptable or positive meanings, the term "tourist" of-

ten connotes a rude, humorously dressed, misbehaving, unsophisticated oaf tangled in the straps of a camera. While most people who are traveling to places outside of their home environments willingly label themselves as travelers, guests, or visitors, they seldom call themselves "tourists," reserving the term for other people.

Unfortunately, while semantic usage may reinforce negative images or attitudes, many of the semantic problems associated with tourism and travel are symptomatic of more deep-seated causes. Some of these causes may be the overt actions of people who travel and those who service them, while other causes may simply be conflicts in values. Although the benefits of travel are vast and varied, including personal, social, economical, educational and cultural benefits, travel is also costly. Often these costs are social and environmental. Depending on one's role in travel and tourism, it is easy to lose sight of either the costs or the benefits.

Although it would be simplistic to believe that benefits of travel only accrue to the buyer and seller of travel, it would be equally naive to suggest that the costs are similarly restrictive. Travel and tourism are complex and all pervasive. They touch and are touched by many facets of our lives, our society, and our environment.

While many of the inherent conflicts in values or effects of tourism activities will not disappear, it is also true that the tourism and travel industry has frequently failed to evaluate itself frankly, to understand and attack some of the more deep-seated problems arising out of tourism and travel activities, and to build lasting bridges of communications and cooperation with other interests in the Nation. This has been particularly the case for tourism and outdoor recreation interests.

Tourism Development is Characterized by a Variety of Problems

As a relatively young and evolving social and economic phenomenon, tourism has many problems. It has been character-

ized as fragmented. In actuality it is comprised of several major interrelated components each with many individual, large, and small organizations and businesses. Although these entities all have common interests and interrelatedness, each has its own narrow goals or objectives. For example, the tourism phenomenon can be divided into at least five components: tourists, transportation systems, services and accommodations, attractions, and information linkages. Within the transportation component are airlines who are primarily interested in filling seats or service stations desiring to sell gasoline. In the services and accommodations sector are hotels eager to fill beds and restaurants desiring to sell meals. Attraction operators may be concerned with providing visitors with an enriching or exciting experience while protecting resources against overuse or abuse. While each has a particular objective and role, all are affected by the volume of travelers moving from their homes to and within destinations. Without this travel, each of the suppliers or providers of these services or products will be unable to meet their particular objectives. The traveler requires these services and products and needs information for finding and choosing among them. This complexity of the travel phenomenon has resulted in a type of fragmentation whereby one component, or entity within a component, does not recognize its interrelationship with other components. Basically, the phenomenon of tourism is defined too narrowly, overlooking the fact that it is a holistic one comprised of many interrelated parts. Components are interdependent and impacts or changes in one component will affect all the others. Herein may lie another reason that resource managers have not recognized their role in tourism in the past. Clearly, many resource managers are responsible for natural and historical attractions critical to the whole system of tourism. These attractions are the lures which draw people to destinations or provide them the opportunities to seek the experiences which help fulfill their needs.

Unfortunately, tourism has been characterized by a lack of coordination and planning. In many cases, the organizations most logically suited to assume the role of coordination and planning have been woefully under funded or have been pre-occupied with tourism promotion. That is, until recently, most state or regional tourism development organizations have either been legislatively restricted or have interpreted their man-

date to be one of primarily promoting, advertising, and providing information about their destination. In many cases, this has resulted in a type of "building-a-better-brochure" syndrome at the expense of coordination, planning, education, research, product development, conflict resolution, and a host of other activities critical to building a high quality, stable, and profitable tourism industry.

Many regions desiring to become tourist destinations or enhance their tourist visitation have believed it is necessary to attract customers or tourists to their region before a high quality and broad spectrum of services and attractions could be provided. However, the promise or offer of a tourist experience must be accompanied with its delivery once the tourist arrives. Thus, in order to realize the potential for tourism development and maximize its benefits, while minimizing social, environmental, political, and economic costs, a region must concern itself with the proper development and management of its product concurrently with its promotion. Unfortunately, many state and regional tourism organizations have assumed that they can best concentrate their efforts on promotion and advertising while leaving service and product development and delivery to the private sector and other public agencies. While this approach is understandable, it is difficult to accomplish and is usually deficient. The industry's fragmentation or the unique roles of its varied parts and the fact that tourism impacts not only those who benefit directly but many other people and activities within a community, requires industry-wide coordination, planning, and many other functions difficult for individual operators to perform.

In the Future the Tourism Industry Must Coalesce

The future development of tourism is primarily a task of enhancing or adding to an existing service and product base. While new attraction and business opportunities occur as tourism grows, major new developments or the rapid, dramatic conversion of a community from one industrial base to a tourism economy is very rare. Thus, the challenge to community leaders and resource managers is not one of approaching tourism as if it was a completely new opportunity but rather one of

improving and adding to what already exists. Unfortunately, in many cases, the existing tourism activity and industry have evolved in a haphazard fashion with little guidance and coordination. Today, increasing competition between tourist businesses and regions, coupled with the growing sophistication of the traveler, requires that if the tourism industry is to prosper and contribute to the citizens of a region, its many interests must coalesce. Concurrently, the industry must refine its products and services through improved planning, coordination, education, and research.

Worthwhile Tourism Development Must be Guided by Three Basic Goals

While the challenges to the tourism industry and the resource manager who chooses to become involved are many, a critical step must be the recognition of the holistic nature of tourism and an understanding of the roles all must play to assure that tourism meets a set of socially and economical beneficial goals.

Tourism must be predicated upon at least three goals. First, it must strive to provide the highest level of visitor or tourist satisfaction. Any effort that does not deliver a quality product, service or experience will not succeed. Second, tourism development must provide rewards to owners. Private businesses must be able to make a profit. Public agencies or stewards must be able to perform a service or provide a product which is regarded as socially and politically worthwhile. Finally, tourism development must be predicated on the protection and wise use of the basic natural and cultural resources which form the attractions base. Herein lies the role of the resource manager and the significance of resource-based tourism. While all people do not travel to enjoy natural-based attractions, a large share of leisure travel involves enjoying the scenic attributes of America's natural lands. Tourists can be segmented into numerous markets or publics which do many different things. However, outside of opportunities to visit friends and relatives and rest and relax, the scenic characteristics of destinations rank as the most important consideration among travelers in choosing a vacation destination. While the traditional outdoor activities of hunting, fishing, camping, winter sports, and

some water sports are of interest to limited groups, the scenic character of America's lands are almost universally important. Smart tourism development encourages the preservation and careful use of unique natural, historical, and cultural environments. Overuse or abuse of resources can destroy the very foundation of the tourism activity. While each of the goals for tourism development is equally important, the latter goal is one that results in much controversy within and between the tourism industry and other community interests and industries. While these controversies will probably never be totally resolved to the satisfaction of all, a tourism industry which is professional, coordinated, and well organized will be better suited to protect its own interests and needs as well as more logically understand and support those of their community and other industries.

The Future

The future development and contribution of tourism will require an increasingly broad array of tasks and functions by both the public and private sectors. As tourism comes of age, it will be accepted as necessary for a quality life style and a legitimate social and economic activity. Both those who travel and the network of private and public organizations which serve their needs will become more sophisticated, efficient, and mature.

Communities, businesses, and organizations which expect to reap the benefits of tourism at minimum economic, social, political, and environmental costs must respond with well-thought-out and planned marketing and development strategies. It is critical that resource managers become full partners in these endeavors. Their management of the resource will have impact upon those who travel and the nearby communities which chose to diversify their economies through tourism development. Although there are many changes occurring in travel, resource use, and economic development, many communities which were traditionally dependent upon tangible products of natural resource lands are facing economic decline. Some of these communities have found that tourism may provide some economic relief as travelers discover the attraction of the nearby lands.

With an increasingly depersonalized living and work environment, more Americans are seeking personally enriching and "back-to-nature" leisure activities resulting in a growing interest in resource-based tourism. Resource-based tourism is not new. What is new is the recognition that the role natural resources and resource managers have long played in the leisure pursuits of the public is an integral part of tourism. Yesterday's recreation is today's tourism. However, critical to the resource base and those affected by its management is that the resource manager must attempt to build bridges with the other components of the tourism phenomenon much as they have worked with all aspects of the industries of other resource uses in the past.

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246 **Impacts of Resource-Based Tourism on Local Income and Employment**

Alan E. Watson and H. Ken Cordell¹

Abstract.—A relatively new emphasis in resource-based recreation management and planning is the increased attention given to the impact of leisure opportunities on local and regional economies. Communities have worked hard to attract the spending associated with festivals and vacations, but state and federal agencies have just started to make progress to estimate the economic impact of proposed or existing resource-based recreation opportunities. There is widespread demand for data and methods for estimating the amount and distribution of these economic impacts. The Public Area Recreation Visitor Survey has been, foremost, a methodology development exercise for assessing the economic impact of proposed changes in recreation opportunities or demand. The accompanying data set was built through a nationwide multiagency effort and was designed to be adaptable for response to several economic impact questions.

Resource managers are often faced with evaluating alternatives in making important decisions. For recreation development or opportunity modification decisions, they must rely heavily on information provided to them by recreation planners. Recreation planners must be able to adequately explain the possible effects of alternate strategies or actions. One effect of recreation resource management decisions which is currently receiving much attention is the potential economic impacts on local or regional economies. Economic impact is a term in sharp contrast with the more widely used concept of economic value. Economic value is typically identified as the willingness to pay for the opportunity to recreate and, as such, represents the worth of on-site recreational access (see Walsh,

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this volume). Economic impact mostly concerns the distribution of spending and production that results as a by-product of a recreational visit. It is an effort to estimate the magnitude of gains or losses which are likely to occur among industries within the impact area as a result of a change in recreation visitation. That change in visitation could be the result of a change in such demand factors as increased population, substitution of activities, or change in socioeconomic conditions, or the change in visitation could be the result of a change in supply factors, such as policy, entrance requirements, or capacity. Impact on the economy can be examined in great detail. Analysis is intended to go beyond determination of only the "direct effects," which are simply income and employment changes as a result of sales or services to recreation visitors and the managing agency. The "indirect effect" refers to income received by additional firms selling goods and services to those impacted directly by consumer spending. "Induced effects" are derived when earnings from direct and indirect sales are spent locally, providing income to persons and businesses who may be neither directly nor indirectly involved in the sale of recreational products and services. The total economic impact of expenditures related to recreational visits is the sum of direct, indirect, and induced effects (Walsh 1987).

Although total expenditures often appear high, the net contribution to the economy of recreation-related expenditures is usually much less. A large portion of retail sales in rural areas, such as those surrounding parks and reservoirs, is often sent out of the area through wholesale purchases of items which are not produced locally (Bromley 1972). Early examinations of economies near federal reserves found that from 10 to 28 cents of each dollar spent for restaurant meals were worker and proprietor income (Clawson 1962). In service sectors, such as lodging, the figure was closer to 50 cents because of the use of local labor to generate the expenditure.

Tourism, or visitation to parks for recreation, generates an interesting mix of direct impacts. While reference is often made to the "tourist industry," there are actually a number of industries that generate sales to visitors but who also serve local residents and industries as well. It quickly becomes evident that appropriate impact analysis needs to look at individual sectors of the economy to determine specific effects of expenditures. Past efforts which highly aggregated expenditures or

reported only total expenditures, however specific to industries, have been appropriately criticized (Gramman 1983, Lichty and Steinnes 1982).

In requesting estimates of economic impact, many planners and managers are interested in knowing regional multipliers. "Economic multiplier" is a very important concept, though it is one that is sometimes difficult to grasp. Walsh (1987) defined the multiplier as the total effects divided by the direct effects. Multipliers are the result of first and all subsequent rounds of spending for inputs and consumer products and services. The multiplier times the direct effect equals the total effect. The greater the multiplier, the greater is the amount of economic activity associated with a change in visitor expenditures.

Maintaining information that describes the importance of shifts in recreation consumption as a component of the economy and that describes the value of recreation opportunities to consumers is one of the targets of recreation and tourism research. An interagency research effort was initiated in 1984 to develop methods to credibly estimate the economic impacts of recreation and tourism.

Public Area Recreation Visitor Study

In 1982, plans were being formulated for replicating the 1977 Federal Estate Visitor Survey. At the same time, several state and federal agencies and related national associations, including the National Association of State Park Directors (NASPD) and the Council of State Planning Agencies, were independently seeking ways to credibly estimate the economic benefits of recreation and tourism. With the joint leadership of the USDA Forest Service, U.S. Army Corps of Engineers, National Park Service, and the NASPD leading economists and scientists working in this area of recreation and tourism, economists were assembled to develop a system for producing credible and cost-effective estimates of the various economic parameters related to recreation and tourism.

Currently six federal agencies, 12 states, four national associations, and six universities are cooperating to apply a state-of-the-art system called Public Area Recreation Visitor Study (PARVS). Data have been collected nationwide since June 1985

and will continue. While some data sets are complete, some additional state agencies are just beginning to collect data. There have been more than 35,000 contacts made with recreation visitors. More than 8,000 of those visitors have provided detailed information about their annual and trip-related expenditures. Expenditure data were collected by all states involved, though federal agencies restricted expenditure data collection to the Southern Region of the United States (see below).

States and federal agencies currently participating in the Public Area Recreation Visitor Study

States

Georgia	New Mexico
Indiana	North Carolina
Kansas	South Carolina
Missouri	Tennessee
Minnesota	Virginia
New Jersey	

Federal Agencies

National Oceanic and Atmospheric Administration
National Park Service
Tennessee Valley Authority
U.S. Army Corps of Engineers
USDA Forest Service

Data were collected in three phases:

1. On-site: Interviews were conducted during a recreation trip to describe recreation visitors, their recreation behavior, and their travel patterns. The methodology developed required roadside interviews of visitors as they exited the site. Basic data were collected on group and individual characteristics and activity participation. All data elements were designed to be comparable with Bureau of Census and other national survey definitions, categories, and standards.

2. At home: Selected visitors interviewed at recreation areas were mailed a follow-up questionnaire after their trip to obtain information about trip-related expenditures. Information was requested on trip-related expenditures made at home, before or after the trip; during travel to or from the site; and in the immediate vicinity of the site itself. Also, annual expenditures for durable items used on the trip were described.
3. About the site: Recreation planners or managers were asked to provide descriptions of visitation to their area so that estimates of economic importance can be extrapolated to recreation sites with attributes similar to the sites actually studied.

Analysis

Trip expenditures made to participate in recreational activities must be examined in relation to defined impact regions. Of primary interest are usually those expenditures made within the impact region by residents of other regions. These expenditures represent outside money flowing into the regional economy. It is assumed that without the study park, these revenue dollars would not flow into the region. Resident expenditures are not typically considered because they represent money already in the region.

The argument has been made, however, that if the park was not located in the region, expenditures to participate in resource-based types of recreation by residents would likely occur at parks in some other region or that this money may be spent on items or activities with lower "value-added" percentages. While economic impact usually refers to income changes resulting from expenditures by nonresident visitors to a region, some justification for examination of resident expenditures related to recreation visits is evident.

Expenditure of dollars by residents does not represent new income to the region. These expenditures may, however, represent a significant redistribution of income. A look at the "significance" or overall magnitude of expenditures for recreation will likely be justified including those spent by both residents

and nonresidents because of their income distribution effects. The potential problem with including resident spending is that the results may be misinterpreted as new income in the region of concern. The proper interpretation is that resident spending represents the interrelatedness between a park and a regional economy.

The expenditure items included in the PARVS mail-back questionnaire were developed specifically to "bridge" to IMPLAN, a state-of-the-art input/output model and data base that simulates the United States economy based on the 1982 Census of Business. IMPLAN provides estimates of the amount of personal and property income, employment, taxes, value added, overall production, and spending in a specified county, group of counties, state, region, or nation. IMPLAN is the product of the Land Management Planning Division, USDA Forest Service. The second version of IMPLAN is currently operated from Fort Collins, Colo., where software and the supporting data base reside on the Fort Collins Computing Center mainframe computer. Efforts to complete a microcomputer version of IMPLAN will soon be concluded.

For the revised version of IMPLAN, attributes of the software system particularly relevant to analyzing recreation and tourism have been emphasized (Alward and Lofting 1985). In addition to improvement of software for Version II, extensive collaboration between the IMPLAN development staff and PARVS coordinating scientists has provided excellent bridging of PARVS data. Highly disaggregated commodity and service groups are used for basic allocation of expenditures (Watson and Bratcher 1987).

Application

Economic impact information appears to be in high demand. There are many reasons why this type of information is desired by recreation management agencies. With the testing and intense review of impact assessment methods by the PARVS multiagency team of scientists and planners, a tremendous amount has been learned about why this type of information has been requested and how people hope to use it. One of the most frequently cited expectations expressed by public agency planners is that of improved cooperation be-

tween public and private concerns. A true understanding of the distribution of economic benefits resulting from visitation to recreation sites in a community is very desirable. Many feel that when the true economic effects are seen by local business people, a more sincere interest may develop (in cases where it does not already exist) to form a strong partnership in planning and providing recreation.

In a recent effort by the Tennessee Valley Authority (TVA), using PARVS expenditure data, projected changes in use due to proposed changes in services provided by the agency were estimated to produce up to an additional \$257 million annually in total impact, depending on which proposal is ultimately selected (Cordell et al. 1987a). The employment increases across the proposed options could be from 44 to more than 4,000 new jobs. Estimates of multipliers varied for various user groups with different expenditure patterns. Across all user groups examined, multipliers ranged from 1.75 to nearly 2.3. TVA officials expressed hope that the region could be enlisted in a cooperative spirit that would result in a thriving tourism economy in the 12-county Land Between the Lakes region. Public response to impact projections was positive (Anonymous 1987).

Some very useful information which is expected to result from economic impact analysis is the extent of the impact of different activity groups. In weighing planning recommendations, a better understanding of the different economic effects of different user groups on a specified economy is highly desirable. For instance, the Army Corps of Engineers is actively working to trace the effects of expenditures by those who participate in boating activities compared to those who do not. Other groups of interest to various agencies are campers, day users, nature-oriented activity groups, and wilderness visitors. Early analysis of wilderness visitor expenditures suggests that impacts derived from this group may more closely approach those of more development-oriented users than previously expected (Watson et al. 1986). While wilderness-related recreation appears to not be expenditure intensive, the socioeconomic class of many wilderness users allows for some previously unexamined expenditures in the local region.

Another need for economic impact analysis results expressed by planners is for justification of keeping open nonrevenue-producing parks. In a time of shrinking budgets, yet

stable demand levels, local economic effects of recreation services may provide incentives to continue operations which are not financially self-supporting.

Some specific questions that have been proposed by PARVS cooperators (Cordell et al. 1987b) include the following:

1. How much business income and employment could be generated by providing a new recreation area or expanding opportunities in a rural, economically-depressed county?

Through the use of PARVS methodology, alternative development programs can be evaluated. Current research efforts are not to determine fixed estimates of impact from various types of use, but rather to develop a tool to use to evaluate the relative magnitude of impacts expected to result from alternatives proposed.

The PARVS methodology for data collection and bridging, teamed with the IMPLAN data set and computer software, allows the relative impacts to be examined in great detail, as described earlier. For example, selected sectors of the 12-county Land Between the Lakes region have been listed in table 1. For each specific sector listed, the total effects of an increase in visitation due to a proposed development plan are indicated.

It is no surprise to find that the greatest impacts are going to be in the areas of hospitality and recreation services and retail trade. Of course the relative magnitude of these effects would be expected to vary across proposed alternatives. Table 1 also

Table 1.—Selected economic sectors of the 12-county Land Between the Lakes region and changes to total effects predicted to result from a proposed addition of major attractions and services.

Sector	Total gross output (mm \$)	Employee compensation (mm \$)	Proprietor income (mm \$)	Employment (jobs)
Eating and drinking	3.202	0.906	0.250	91
Amusement and recreation	1.874	.669	.368	57
Hotels and lodging	4.197	.827	.650	115
Wholesale trade	1.756	.724	.229	37
Retail trade	3.719	.155	.370	123
Doctors and dentists	.770	.325	.140	6
Hospitals	.726	.358	.010	20
Real estate	.737	.037	.452	4

shows the result of examining the induced effects (probably some direct effects) on nonrecreation-related sectors. Examination of the total effects on specific sectors of the economy is now possible.

2. Do some types of recreation areas provide more local economic stimulation than others?
3. Which businesses are most likely to be affected by closing a particular recreation area to public use? Many wilderness allocation decisions remain to be made. Further clarification of the benefits of wilderness to a local or state economy could greatly influence public sentiment regarding the allocation decision. In other decision situations, the economic effects on specific types of businesses need to be known by the governing agency and the public who is being asked to respond to the proposal.
4. What form of consumption and/or business tax structure would be most appropriate for providing revenues for operating and maintaining recreation areas?

Tourist-related industries have contributed substantially to our Nation's economic recovery and stability. To date, those businesses who serve the tourists are not taxed in any special way, which would support the publicly owned and managed attractant resource. Many discussions over the years have revolved around the appropriateness of recreation visitors to carry more of the recreation management costs of an area through increased fees. The argument is that visitors most likely benefit more from the area's existence than do nonvisitors. Similarly, businesses close to the recreation area likely benefit financially more than those businesses who are not close to the recreation area. If the beneficial economic effects of development programs can be documented, those firms which will benefit from proposed development plans should be more cooperative in contributing to the costs of development through taxes or contributions.

Conclusions

Each agency participating in the Public Area Recreation Visitor Survey is motivated by a different set of expectations. To some agencies the PARVS data collection effort was a pilot test. Adaptation of the measurement instrument and methodology will be incorporated into future rounds of data collection. To others the emphasis is on determining the many applications possible for an individual agency's current data set. In other cases, data pooling is occurring to increase the sample sizes for particular types of areas or for particular types of visitors.

PARVS data and IMPLAN analysis are being used today to determine the economic effects of recreation planning alternatives. With the widespread application of this single measurement instrument, methodology, bridging methods, and analysis procedures, planners can establish credibility for economic impact estimates which are made. A packaged economic impact assessment method has been developed and is near widespread publication and availability. Consideration of how the local, regional, and state economy will be affected as a result of agency activities is now a real possibility.

Recreation and tourism interests will face both good and bad times in future years. Since about 1977, there have been some lean years and many changes have occurred. During these years of change, there were some who gained and some who lost. The methodology being finalized by the PARVS Working Group would have permitted better monitoring and prediction of the consequences, especially of the budget cuts of the recent past. For the recreation and parks community, the tools now exist to monitor actual change and to simulate proposed change. Lack of ability to show concrete evidence of effects of decisions has been one of the more crucial issues that has faced recreation and park interests.

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Rural Resident Community Life Satisfaction and Tourism Development Attitudes: A Comparison of Forest and Nonforest Community Residents

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Abstract.—This paper describes the Colorado Rural Recreation Development Project. The primary purpose of this project is to contribute to the quality of rural community life through the provision of organized recreation services and, where appropriate, through technical assistance in addressing local economic needs through tourism development. However, the project also serves as a unique laboratory for research examining resident perceptions of community services, quality of life, and of the impacts and desirability of tourism development across different types of rural communities. Second, the paper presents the results of a comparison of residents of communities located in or adjacent to national forests with residents of other rural, primarily agricultural communities. Three observations are made. The forest community residents had consistently higher importance scores and lower satisfaction scores on seven dimensions of community life. When examined from a resident community life satisfaction perspective, however, there were no consistent differences between forest and nonforest community residents. Perhaps of most concern, residents of both community types indicated they did not feel that the future of their communities was particularly bright. Finally, when compared to nonforest community residents, forest community residents tended to have more positive perceptions of the impacts of tourism and tended to be more favorable toward tourism development.

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Introduction

Since 1981, the staff of the Center for Recreation and Tourism Development, University of Colorado at Boulder, has assisted rural Colorado communities through the Colorado Rural Recreation Development Project (CRRDP). The primary purpose of this project is to help rural communities establish and maintain a community recreation and, in many cases, tourism system. This system is designed to contribute to the quality of rural community living through the provision of organized recreation services for residents and, where appropriate, through technical assistance in addressing local economic needs through tourism development. Funded by the Mountain Bell Foundation, the University of Colorado at Boulder, and the Colorado Office of Rural Job Training, the project involves the placement of a recreation director in participating communities over the summer period with the primary responsibility of developing structured recreation services. Additional technical assistance services are contracted and coordinated by the central staff in Boulder (Long and Kraus 1987).

Within the state of Colorado, there are approximately 14.4 million acres of national forest land. Many of the communities that participate in the CRRDP, due to their proximity to this national forest land, are impacted both by the timber industry and, in many cases, by the behaviors of tourists seeking natural resource-related recreation opportunities. However, very little empirical information exists concerning these impacts. As with most rural community research, the existing studies tend to be case studies which examine the short-term changes that occur in a specific community as a result of changes in the local timber and/or tourism industry.

As part of the CRRDP, a resident survey is conducted at the beginning of each summer. The primary purpose of this survey is to serve as a needs assessment leading to the development of the organized recreation program. Additionally, the survey is structured to provide basic data on resident perceptions of community services, quality of life, and of the impacts and desirability of tourism development. This paper presents an analysis of the information collected by this survey, comparing communities located in or adjacent to national forest lands with other rural, primarily agricultural communities.

Community Satisfaction and Tourism Development

Resident Satisfaction with Community Life

Over the past 20 years, the impact of forest resource development on the social fabric and quality of life in surrounding communities has become an important concern of forest planning. Similarly, public concern for quality of life has become increasingly important, particularly in rural communities where quality of life is viewed not only as a social issue but also as a key to economic development (Betz 1987).

Community quality of life is a very difficult concept to define (Tremblay et al. 1983). Conceptually, we have defined it as the human conditions within a community setting which affect the social well-being and the life satisfaction of residents. In the literature, it has been operationally defined in terms of both objective and subjective indicators. Objective indicators focus either on the availability of different services such as health services or on the percentage of the population having a given level of income, education, or employment.

Although community development policies have traditionally focused on these objective quality of life indicators, many researchers maintain that they must be examined in the perspective of their effects on the community as perceived by the residents. Consequently, subjective quality of life indicators have been developed focusing on resident community life satisfaction (e.g., how residents feel about their community, the community's future and growth, and their satisfaction with living in that community) (Tremblay et al. 1983).

From a social impact or community development perspective, the emphasis of quality of life research must focus on assessing how the physical structure, management, and service delivery characteristics of a community influence quality of life, particularly if subjectively operationalized as resident community life satisfaction (Allen and Beattie 1984, Goudy 1977, Rojek et al. 1975). Allen and Beattie (1984) developed a likert scale measuring resident satisfaction with seven dimensions of community life: (1) public services, (2) formal education, (3) physical environment, (4) leisure and recreation, (5)

economics, (6) opportunities for citizen involvement, and (7) medical services. In their research in a single rural Wyoming community, they examined community life satisfaction as a function of these dimensions. Their findings supported a hierarchical model similar to Maslow's (1954) theory of motivation. The basic or subsistence concerns of residents focused on income, housing, employment, education, health, and safety. Assuming that these basic concerns were reasonably satisfied, resident community life satisfaction tended to be a function of leisure and recreation, economics, and the quality of the physical environment. As with most community quality of life research, however, the inability to examine differences between communities limited the theoretical significance of these findings. Since all of the study participants were members of the same community, they all had essentially the same environment, economic, and leisure opportunities. Thus, the results could not be used to better understand how basic differences in communities lead to differences in either resident perceptions of the services and opportunities available to them or in their general community life satisfaction. The CRRDP is being used as a laboratory to study these differences across a variety of different communities.

Attitudes Toward Tourism Development

In rural communities throughout the United States, tourism is receiving increasing recognition as a regional development tool (Liu and Var 1986). However, local government tourism planning has been inadequate both in meeting tourist needs and in optimizing the benefits to the host community (Gunn 1979, U.S. Senate 1977).

Defined as the provision or enhancement of facilities and services to meet the needs of the tourist (Pearce 1981), tourism planning should focus on promoting development which optimizes not only economic benefits but also the potential social and environmental benefits to the community (Murphy 1985). Unfortunately, most local governments have traditionally focused only on the perceived economic benefits of tourism (Pizam 1978). Their tourism planning has been characterized as economic "boosterism" without careful or rational consideration of the potential benefits and costs of tourism development (Getz 1986).

With the increasing recognition of the potential social and environmental costs of tourism development (Butler 1975, Jafari 1981, Pizam 1978, Rosenow and Pulsipher 1979, Young 1973), however, the importance of comprehensive tourism planning, including public participation, is becoming increasingly recognized (Getz 1982, 1983; Haywood 1975; Heenan 1978; Loukissas, 1983; Murphy 1981, 1985; Pearce 1981). As stated by Murphy (1981, p. 195), "If tourism is to develop within a community, the hosts of the 'host industry' must become willing partners." Consequently, numerous studies of local resident attitudes toward tourism impacts have been conducted over the past few years (Belisle and Hoy 1980; Brougham and Butler 1981; Cooke 1982; Getz 1977; Liu and Var 1986; Murphy 1981, 1983; Pizam 1978; Rothman 1978; Sheldon and Var 1984; Thomason et al. 1979).

With the purpose of identifying the attitudes and concerns of potential "publics" and special interest groups, many of these studies have focused on identifying differences in attitudes toward tourism among types of local residents identified on the basis of socio-demographic characteristics (Belisle and Hoy 1980, Liu and Var 1986, Pizam 1978), place of residence (distance from the tourism area of the community) (Belisle and Hoy 1980, Sheldon and Var 1984), and economic dependency on tourism, operationalized both as type of employment (Pizam 1978) and by comparing local entrepreneurs, public officials, and other residents (Murphy 1983, Thomason et al. 1979). This research has found very little difference in tourism attitudes by socio-demographic characteristics that the perceived impact of tourism decreases as the distance between the individual's home and the tourism sector of the community increases, and the favorability of attitudes toward tourism increases with the individual's economic dependency on tourism. Concerning the favorability of attitudes toward tourism, it is generally concluded in an exchange theory perspective that those people who benefit from tourism will have more favorable attitudes toward tourism (Murphy 1983, Pizam 1978, Thomason et al. 1979).

As with the community life satisfaction research, these studies have typically been case studies examining tourism attitudes in a single community. Almost all of current tourism planning theory and literature is derived from a carrying capacity perspective. Although such research is fundamentally

basic to such a perspective, very little is known concerning the differences in tourism attitudes across different types of communities. Again, the CRRDP is being used as a laboratory to examine these issues and concerns.

Methodology

In 1986, survey data were collected in 20 rural Colorado communities as part of the CRRDP. Prior to beginning their work in the communities, the directors participated in a 5-day training program at the University of Colorado at Boulder. One day of that training was devoted to the procedures for administration of the community survey.

Self-administered questionnaires were hand-delivered to approximately 10% of the households in each community by the director. At a scheduled time, the director or a project youth employee returned to the household to pick up the completed questionnaire. Households were selected using systematic sampling with a random starting point. Specifically, the director was instructed to begin at a particular point in the community and select every n^{th} household. In the case of multiple family residences, each living unit was considered a household. The starting point and the selection interval were assigned by the project administrator. If a house appeared vacant, the director was instructed to go to the adjacent house. If the house appeared to be occupied but no one was home, the director returned at another time. If no one was home on the return visit, the director went to an adjacent house. At each house, an adult (18 years or older) was asked to participate in the survey. Those that agreed to participate were given the questionnaire and a time was scheduled when the director could return to collect the completed instrument.

Of the contacted households, 80.1% completed the questionnaire. Overall, 1,062 households were surveyed. Recognizing that seasonal residents would influence the response, particularly to the tourism questions, the data collection was conducted between 24 May and 1 June 1985. Of the 20 communities involved in the project in 1986, 9 were located in or adjacent to a national forest and 11 were located in either the eastern plains or western slope regions of Colorado. Of the 1,062 survey respondents, 410 (38.6%) lived in forest communities and 652 (61.4%) lived in nonforest communities.

The survey questionnaire included three sections of interest to this paper. First, community life satisfaction was measured using a seven-point Likert scale derived primarily from the work by Allen and Beattie (1984). Second, also using the seven-point likert scales developed by Allen and Beattie (1984), resident perceptions of (1) the importance of seven dimensions of community life to the respondent and (2) his/her satisfaction with those dimensions of the respondent's community were measured. The specific items in each dimension are shown in table 1. Third, a series of tourism perception and attitude questions, derived primarily from the works by Belisle and Hoy (1980), Murphy (1981), Sheldon and Var (1984), and Thomason et al. (1980), were asked concerning (1) the respondent's perception of the impacts of tourism, (2) tourism development policy and taxes, and (3) the desirability of additional tourism development in the respondent's community. A seven-point likert format was also used for these questions.

In addition to standard bivariate statistical analyses, importance-performance analysis is used to evaluate the combined importance and satisfaction data concerning the dimensions of community life. Originally a marketing tool used to evaluate products or services, importance-performance analysis has evolved to include the evaluation of community services and outdoor recreation facilities (Crompton and Lamb 1986). As shown in figure 1, importance-performance analysis examines the quality of services (satisfaction) as a function of their importance as assigned by respondents. The lower the degree of importance, the lower the degree of success or failure. Services rated high in importance and high in satisfaction are considered major successes, while those rated high in importance and low in satisfaction are considered major failures. Services rated low in importance and high in satisfaction are considered trivial successes. And, services rated low in importance and low in satisfaction are trivial failures.

Table 2 shows the socio-demographic characteristics of the respondents to the 1986 survey by type of community. There were no significant differences between the respondents from forest and nonforest communities on length of residence, age, sex, and marital status. The forest community respondents did, however, tend to have a slightly higher overall education and a greater tendency to be employed full-time. Importantly, the forest communities also had a higher unemployment level.

The nonforest community respondents were more likely to be full-time homemakers or retired. On the basis of these results, the forest community residents do not appear to be substantially different from the nonforest community residents.

Table 1.—Dimensions of community life scales.

Dimension	Scale Items
Public service	<ul style="list-style-type: none"> fire protection welfare and social services public transportation to and from other communities police protection local government roads and highways public health services
Formal education	<ul style="list-style-type: none"> college/university courses (for credit) public schools (k through 12 programs) technical/vocational training
Environment	<ul style="list-style-type: none"> physical geography or terrain environmental cleanliness (air, water, soil) climate and weather general appearance of your town general appearance of your area of town
Leisure	<ul style="list-style-type: none"> private/commercial recreation (clubs, movies, bowling) publicly funded recreation (social, cultural, sports programs for youth and adults) parks and open space adult education (noncredit courses)
Economics	<ul style="list-style-type: none"> cost of living job opportunities housing (cost and availability) utilities (water, gas, electric, sewage) shopping facilities
Citizen involvement and social opportunities	<ul style="list-style-type: none"> opportunities to be with friends and relatives citizen input into community decisions churches and religious opportunities opportunities in civic and fraternal organizations opportunities to become familiar with other residents
Medical	<ul style="list-style-type: none"> hospital and medical facilities medical doctors/dentists emergency services

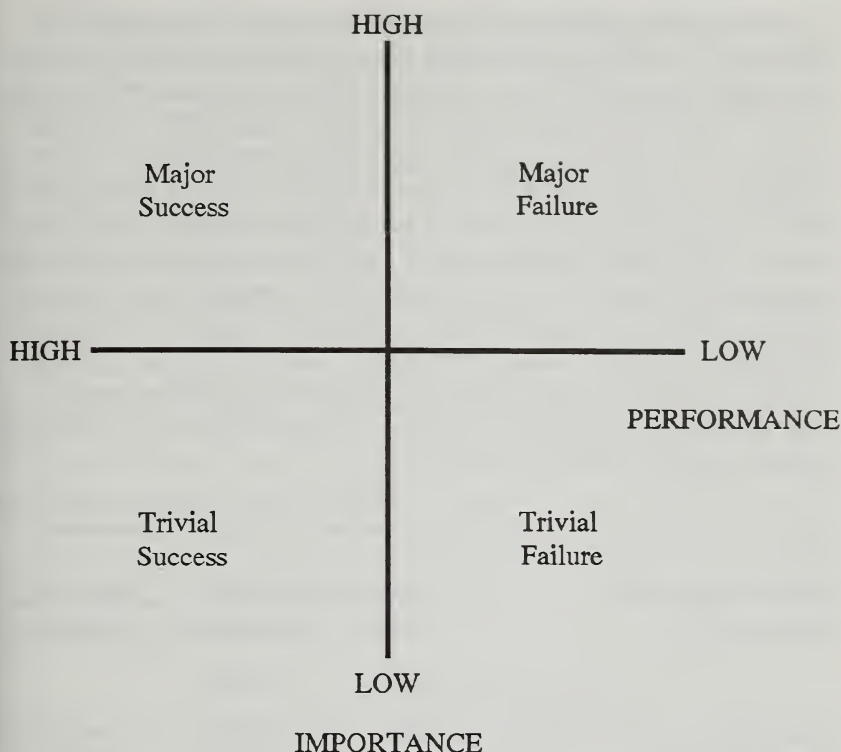


Figure 1.—Importance-performance analysis quadrants.

Substantial differences between residents of the two community types existed, however, on both the importance and the satisfaction measures for the dimensions of community life scales (table 3). Generally, the importance scores of the forest community residents tended to be higher than those of the nonforest community residents. Conversely, the satisfaction scores of forest community residents tended to be lower. The implications of these results are best reflected when examined from an importance-performance perspective (fig. 2). For forest community residents, formal education, leisure, and economics are in the major failures quadrant. By comparison, economics was only slightly within the major failures quadrant for the nonforest community respondents. Both formal education and leisure were in the major successes quadrant for nonforest community residents. Overall, it would appear that forest community residents have significantly higher expectations for community services and substantially lower satisfaction with those services.

Importantly, however, these differences do not appear to significantly affect community life satisfaction (table 4). Only two significant differences between forest and nonforest community residents were observed on the community life satisfaction items and those differences were contradictory. Nonforest community residents were more likely than forest community residents to agree with both the statement that "the future of this town looks bright" and the statement that "not much can be said in favor of this town." Perhaps most importantly, the mean score for both community types on the item "the future of this town looks bright" was less than 4.0, the neutral point on the disagree to agree scale. In other words, the "average" respondent in both communities was concerned about the future of his/her town.

Table 2.—Socio-demographic characteristics by type of community.

Socio-demographic characteristic	Type of community		Summary statistic
	Forest	Nonforest	
	(n=410)	(n=652)	
Mean length of residence (years)	18.1	16.8	t = 1.2
Mean age (years)	44.0	44.2	t = 0.2
Sex			X ² = 1.4
female	64.5%	60.7%	
male	35.5	39.3	
totals	100.0	100.0	
Marital status			X ² = 3.0
married	76.0%	71.0%	
nonmarried	24.0	29.0	
totals	100.0	100.0	
Education			X ² = 8.8*
less than a high school graduate	10.3%	14.3%	
high school graduate	48.3	47.8	
some college	19.3	22.4	
college graduate	22.1	15.5	
totals	100.0	100.0	
Employment			X ² = 14.4**
employed	67.5%	58.0%	
retired	12.2	18.8	
full-time homemaker	12.5	17.6	
unemployed	7.8	5.6	
totals	100.0	100.0	

*Significant at alpha = .05.

**Significant at alpha = .01.

Tourism in the rural areas of Colorado is heavily focused on the outdoor recreation opportunities in the forested mountain regions of the state. Still, the residents of the communities in or adjacent to national forests generally tended to have more favorable perceptions and attitudes toward tourism development (tables 5 and 6). Specifically, forest community residents tended to have lower perceptions of the potential negative impacts of tourism and higher perceptions of the potential positive impacts (table 5). Importantly, of the six negative impact questions, only one had an average score for both groups greater than 4.0, the neutral point on the seven-point disagree-agree scale. Both forest and nonforest community residents tended to agree that tourism increases the traffic problems of an area. Similarly, the average score on all of the positive tourism impact items was greater than 4.0.

Table 3.—Mean importance and satisfaction with dimensions of community life by type of community.¹

Dimensions of community life	Type of community		t value
	Forest	Nonforest	
Importance			
medical	2.00	1.81	3.1**
economics	1.68	1.61	1.2
environment	1.65	1.36	5.1***
public service	1.55	1.42	2.2*
formal education	1.36	1.27	1.3
citizen involvement/social oppor.	1.19	1.18	0.2
leisure	1.15	1.08	1.2
Satisfaction			
environment	0.62	0.65	0.6
citizen involvement/social oppor.	0.52	0.60	1.5
medical	0.49	0.50	0.1
public service	0.36	0.35	0.1
formal education	-0.16	0.24	5.7***
leisure	-0.28	0.02	4.5***
economics	-0.38	-0.04	4.8***

*Significant at $\alpha = .05$.

**Significant at $\alpha = .01$.

***Significant at $\alpha = .001$.

¹Dimension scores for each individual range from -3 to +3, where -3 = extremely low importance/satisfaction, 4 = neutral, and +3 = extremely high importance/satisfaction.

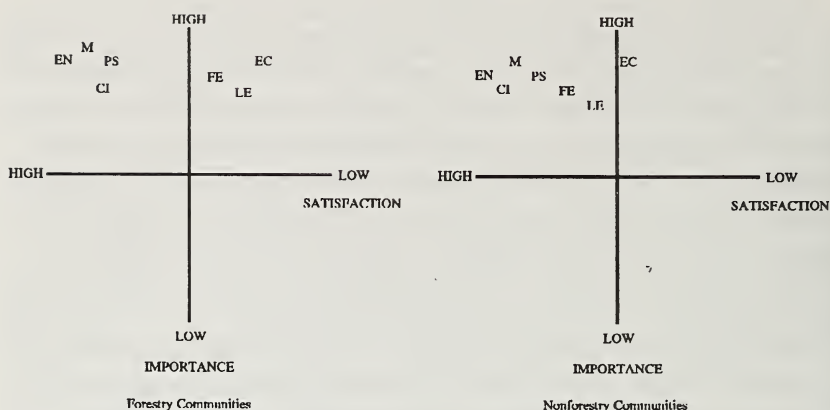


Figure 2.—Performance results for dimensions of community life by community type. PS = public service, FE = formal education, EN = environment, LE = leisure, EC = economics, CI = citizen involvement and social opportunities, and M = medical.

Table 4.—Mean community life satisfaction by type of community.¹

Community life satisfaction measure	Type of community		t value
	Forest	Nonforest	
I am satisfied with this town as a place to live.	4.98	4.92	0.6
I am satisfied with the quality of life in this town.	4.57	4.67	1.1
This town is an ideal place to live.	4.31	4.25	0.5
The future of this town looks bright.	3.19	3.51	3.1**
People won't work together to get things done for this town.	3.94	4.05	1.1
This town has good leaders.	4.14	4.09	0.6
Not much can be said in favor of this town.	3.09	3.33	2.5**
Residents of this town continually look for new solutions to problems rather than being satisfied with things as they are.	3.97	3.92	0.6
Overall, I am satisfied with community life in this town.	4.70	4.60	1.1

**Significant at $\alpha = .01$.

¹Items were measured on a seven-point Likert scale where 1 = most strongly disagree, 4 = neutral, and 7 = most strongly agree.

The forest community residents were also more likely than nonforest community residents to support additional tourism development (table 6). Specifically, the forest community residents were more likely to allow nonresidents to develop tourism attractions in their area and less likely to feel that local government should restrict tourism development. Further, the forest community residents were also less likely to support either differential fees for nonresidents at outdoor recreation areas or a lodging tax. Finally, the forest community residents were significantly more likely to feel their community should try to attract more tourists to their area.

Table 5.—Mean perceptions of tourism impacts by type of community.¹

Perception of tourism impacts	Type of community		t value
	Forest	Nonforest	
Negative impacts			
Tourism development unfairly increases real estate costs.	3.87	3.89	0.3
Tourism development reduces the quality of outdoor recreation opportunities.	3.42	3.68	3.0**
Tourism development increases the amount of crime in an area.	3.90	3.99	1.2
Ordinary people don't benefit from tourism.	3.33	3.60	2.9
Tourism development increases the traffic problems of an area.	4.48	4.32	1.9
Tourism development increases property taxes.	3.98	4.12	1.7
Positive impacts			
Tourism development increases the quality life in an area.	4.35	4.26	0.3
Increasing the number of tourists visiting an area improves the local economy.	5.17	4.86	3.8**
Tourism development improves the appearance of an area.	4.50	4.33	2.2*
Tourism development increases the number of recreational opportunities for local residents.	4.69	4.61	0.9

*Significant at $\alpha = .05$.

**Significant at $\alpha = .01$.

¹Items were measured on a seven-point Likert scale where 1 = most strongly disagree, 4 = neutral, and 7 = most strongly agree.

Conclusions

The existing research on impacts of various developments on rural communities tends to be case studies which examine only the short-term changes that occur in a specific community as a result of a specific project or development. A substantive need exists to expand on this limited knowledge base by conducting research over a variety of community types.

To address this need, the Colorado Rural Recreation Development Project is being used as a laboratory to study differences in rural resident perceptions of community services, quality of life, and of the impacts and desirability of tourism development across a variety of communities in Colorado. Between 1981 and 1987, over 100 small, rural communities have been involved in this project. Beginning in 1984, a resident survey has been conducted in each project community. While the primary purpose of this survey is to provide input to local recreation programming needs, it also provides the opportu-

Table 6.—Mean attitudes toward tourism development by type of community.¹

Attitude toward tourism development	Type of community		t value
	Forest	Nonforest	
Tourism development policy			
Nonresidents should be allowed to develop tourism attractions in an area.	4.03	3.86	2.0*
Local government should control tourism development.	4.15	4.20	0.6
Local government should restrict tourism development.	3.29	3.62	3.8***
Tourism taxes			
Tourists should pay more than local residents to visit parks and outdoor recreation facilities	3.54	3.91	3.7***
Tourists should pay a special tax on hotel and motel room fees.	3.35	3.55	2.3*
Desirability of additional tourism development			
This community should try to attract more.	5.17	4.34	8.6***

*Significant at $\alpha = .05$.

**Significant at $\alpha = .01$.

***Significant at $\alpha = .001$.

¹Items were measured on a seven-point Likert scale where 1 = most strongly disagree, 4 = neutral, and 7 = most strongly agree.

nity to collect similar basic data on the perceptions and opinions of rural residents in a variety of different settings.

This paper presents a descriptive analysis of these data, comparing residents of communities located in or adjacent to national forest lands with residents of other rural, primarily agricultural communities. Prior to stating our conclusions, an important limitation of the project should be acknowledged. Community participation in the Colorado Rural Recreation Development Project is self-determined. Eligible communities are contacted during the year preceding their involvement in the project. Those wishing to participate are required to provide housing and office space for the recreation director and a programming budget. Consequently, a nonrandom sample of communities participate in the project.

Given this limitation, however, three conclusions seem appropriate to this analysis. First, when compared to residents of nonforest communities, residents in communities located near or adjacent to national forest areas in Colorado appear to be more concerned about the quality of their community services. They appear to have both higher expectations and lower satisfaction. Specifically, the forest community residents had consistently higher importance scores and lower satisfaction scores on seven dimensions of community life. When examined from an importance-performance perspective, the forest community residents indicated that formal education, leisure, and economics were major failures of their community. By comparison, economics was only slightly within the major failures quadrant for the nonforest community residents.

Second, when examined from a resident community life satisfaction perspective, there were no consistent differences between forest and nonforest community residents. Perhaps of most concern, residents of both community types indicated they did not feel that the future of their community was particularly bright. As with many rural areas, the declines in the traditional agricultural, mining, forestry, and energy industries have created significant economic problems in rural Colorado. These problems are reflected in the position of the economics measure in both the forest and nonforest importance-performance analyses. It would appear that they have also affected resident perceptions of their communities' futures.

Third, rural residents of Colorado have relatively positive perceptions and attitudes toward tourism development. Again,

this may be the result of the current declines in other economic sectors. Tourism, as a rural industry, has not experienced the significant declines suffered by other industries. The results tend to support the exchange theory perspective of resident tourism attitudes that is common in the literature. Residents of those communities most likely to benefit from tourism development in rural Colorado, the forest communities, tend to perceive both less negative impacts and more positive impacts than the nonforest residents. They also tend to be more favorable toward tourism development in general. The only significant negative impact of tourism development commonly perceived by rural Colorado residents is traffic congestion. Given the widely publicized winter tourism traffic problems of I-70 west of Denver, this result is easily understood.

In conclusion, the Colorado Rural Recreation Development Project provides a relatively unique model for conducting research examining rural issues and concerns. We feel it is a significant improvement over the existing case study research models in that it provides the opportunity to examine differences in rural issues and concerns over a variety of community types. Natural resource planning is a particularly appropriate application of this research model. Forest resource planning is becoming increasingly system-oriented. Assessing the benefits and costs of future management decisions will necessarily include assessing the external impacts of alternative management strategies. Research examining those impacts will be substantially improved if a variety of communities are involved.

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245 **Economic Benefits of Wildland Recreation and Environmental Protection //**

Richard G. Walsh¹

Introduction

Estimating the economic value of wildland recreation and environmental protection is important and controversial. This is particularly evident in states where recreation resources have alternative uses such as for subdivisions, and for agriculture, timber, mineral, energy, and water development. Public perception of the value of recreation resources in their various uses influences decisions about alternative development projects. The scarcity of recreation resources makes it critical that they be evaluated to assess their contribution to national economic development. The purpose of this paper is to review some important studies of recreation economic demands and benefits for use in program appraisal.

The problem is complicated by the fact that outdoor recreation agencies produce both on-site and off-site benefits. There are benefits that accrue to individuals in addition to the values they receive from visiting a site or to individuals who may never visit the site at all. These off-site (i.e., public or external) benefits have been described as the willingness to pay for: (1) the option of possibly visiting a site in the future; (2) the value from simply knowing a site exists; and (3) the satisfaction from knowing the site will be available to future generations. Our purpose here is to illustrate the proportion of total recreation resource benefits that are attributable separately to recreation use and to protecting the quality of the resource. The guidelines of the federal government recommend that recreation agencies establish programs consistent with the benefits to us-

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ers and the general public. Max Peterson, former Chief of the U.S. Forest Service, believes that, "First, we must establish the true value of outdoor recreation to the American people, and then recognize that value in our planning and our politics."

The contribution of wildland recreation to national economic development is defined as the net willingness to pay by all of the citizens. Economists use the term "social benefits" referring to the fact that both internal and external benefits should be included in the calculation. The output of outdoor recreation agencies includes both recreation use benefits and environmental protection benefits to the general public. Recreation use may be classified as an internal or on-site benefit while much of environmental protection represents an external or off-site preservation benefit to the general population including users and nonusers.

The national economic development objective is to increase the value of the output of goods and services. Economists often refer to this as the economic efficiency objective. But we should keep in mind that it means improving the net benefits or welfare of all of the citizens as expressed by individual willingness to pay. The purpose of economics is to increase the well being of individuals to society, and each individual is the best judge of how well off he or she is in a given situation. Both of these propositions follow the predominant Western moral tradition of recent centuries, which regards individual welfare as the ultimate objective of public policy.

This paper concerns the measurement of economic welfare with demand models as an aid to government recreation and environmental protection investment and program appraisal. Review of the issue is prompted by what is perceived to be inappropriately large differences in measurement techniques among various analyses in the published literature. In particular, it will show that the procedures applied in several estimates of value impart a substantial downward bias to benefit estimates. The number of studies reviewed is relatively small. However, due to the readiness of political decision makers and interest groups favoring alternative uses of recreation resources to take a pessimistic view of the economic importance of outdoor recreation and environmental protection, they have had a disproportionate influence in the public debate on recreation resource policy.

Conceptual Approach

Measures of the economic benefits of wildland recreation and environmental protection are applied in comparisons of benefits and costs to see whether society is better off because of expenditures by public agencies. Are the social gains greater than the social losses or less? The comparison is between the value to the private sector of what it gives up to support a government recreation and environmental protection program (represented by taxes, user fees, and opportunity costs) and the value of the output that the government provides with the resources (represented by the willingness of citizens to pay for the government-produced opportunities, if they had to). A public recreation program, for example, can increase the welfare of society if the resources given up by the private sector are used to produce greater benefits than they would produce in the absence of the government programs.

Benefit-cost analysis helps public decision makers choose among alternative recreation programs and projects which vary in size, design, and purpose. It assists decision makers in: (1) developing the optimum size program or project; (2) designing it to be of maximum efficiency; and (3) choosing from the alternative available projects that are expected to contribute the most to national economic development (Jubenville et al. 1986).

Consider the fundamental recreation economic problem of governments throughout the world: How large should the public recreation program be? How much should government tax and spend for outdoor recreation? To achieve efficiency in government, spending on public recreation programs should be increased in each area and in total until the marginal social benefits of the last recreation visitor day equal its marginal social costs. This would ensure that the net benefits of public recreation programs to society are maximized.

In figure 1, for example, the upper panel illustrates the total social benefits of public outdoor recreation in the United States compared to the total social costs of producing these recreation opportunities. The lower panel shows the marginal social benefits and costs derived from the totals in the upper panel. The marginal curves are simply the changes in value of the total curves resulting from changes in the amount of public recreation opportunities provided. They are the familiar

demand and supply curves, with optimum output occurring where the two intersect, i.e., where supply equals demand.

The total social benefits (TB) curve shows that for the first dollars the government spends on recreation programs, citizens are willing to pay a great deal because of the scarcity of recreation opportunities; there are very large social benefits. However, as more dollars are spent, the value generated by each additional dollar becomes smaller, i.e., diminishing marginal benefits. As individual demands for recreation activities

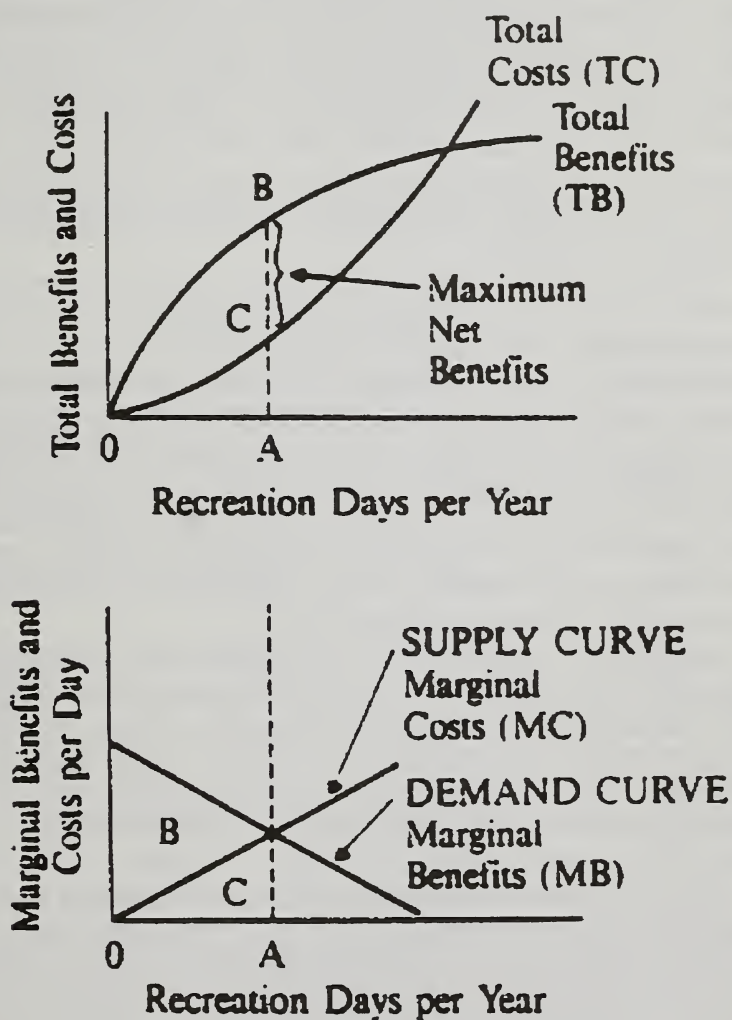


Figure 1.—Optimum size of the public recreation program, United States. Source: Walsh (1986).

are fully satisfied, the shape of the TB curve becomes flatter as more and more dollars are spent on public recreation.

From figure 1, we see that the national economic development objective would be best served with recreation programs at output OA—where the government budget would be AC and total benefits, AB. The benefit-cost ratio is AB/AC and the excess of benefits over costs (net benefits) is BC, which is the greatest vertical distance that exists between these two curves. If government recreation output were less than OA, there would be some potential net benefits which would not be realized. If the output were larger than OA, all dollars spent in excess of AC would entail social costs in excess of the benefits that they produced. The same result is shown in the lower panel of figure 1 for the marginal curves associated with the total curves of the upper panel. There, the familiar economic proposition is applied to the public sector; net benefits (area B) are maximized where marginal social benefits (MB) equal marginal social costs (MC).

Debate over public recreation budgets may be characterized as addressing the question of whether the agencies involved produce outputs that are less or greater than optimum. Managers of public recreation programs, in effect, argue that existing budgets are insufficient and should be increased to point OA, but opponents argue that the proposed budgets are excessive and should be decreased to point OA. No one knows for sure which view is correct, and citizens have various opinions on the matter. However, the issue could be better resolved with more accurate information on the contribution of recreation to national economic development.

Government expenditures for recreation were estimated at approximately \$8 billion in 1982, when government output was estimated at 3.1 billion recreation visitor days. On this basis, government expenditures were equal to about \$2.50 per recreation visitor day. It seems likely that total benefits substantially exceed government costs based on the limited aggregate U.S. data that are available. Table 1 suggests that benefits in the same year averaged about \$8.50 per recreation visitor day. In this case, the total benefits of 3.1 billion recreation visitor days would have amounted to \$26 billion. Assuming this represents an approximation of the annual equivalent of the present value of social costs and benefits, it would be equal to a benefit-cost ratio of approximately 3.0. Figure 1 indicates

that when benefits exceed costs by such a large amount, output is likely to be less than optimum. All budgets to the left of AC have higher benefit-cost ratios than budgets to the right.

Benefit-cost analysis of the recreation program of a single government agency is identical to that of the total recreation program. Consider the U.S. Forest Service, which supplied 233 million recreation visitor days or 7.5% of total public recreation opportunities in 1982. Expenditures on the recreation program of the agency were reported at \$116 million in the same year or only \$0.50 per recreation visitor day. If benefits averaged \$5 to \$10 per recreation visitor day, the total benefits of 233 million recreation visitor days would have amounted to approximately \$1.2 to \$2.3 billion. This would represent an excess of benefits over costs (net benefits) of roughly \$1.0 to

Table 1.—Benefits and costs of recreation and park programs by federal, state, and local government, United States, 1982.

Level of government	Recreation visitor days, RVD	Net economic value, NED ¹	Government expenditures
All government, total			
Million	3,100	\$26,268	\$8,876
Per household	36	\$305	\$103
Municipal and county			
Million	2,200	\$9,363	\$6,140
Per household	26	\$109	\$72
State			
Million	300	\$6,387	\$1,362
Per household	3	\$74	\$16
Federal, total			
Million	600	\$10,518	\$1,375
Per household	7	\$122	\$16

Source: U.S. Census of Government (1982) and estimates in Walsh and Loomis (1986).

¹Municipal and county, \$4.26, unit-day value from Water Resources Council (1983) represents the midpoint (50 points) in the general recreation category, or \$3.20 times 1.33 to correct for 12-hour RVDs. State, \$21.29, assumes that about two-thirds was wildlife related at \$22 and one-third was park and recreation use valued at \$20 (Kalter and Gosse, 1969; Gibbs, 1983; Andrews, 1984; Sorg and Loomis, 1984). Federal, \$17.53, assumes that about one-half is wildlife related at \$22, and one-half is park and recreation valued at \$9.82 times 1.33 to correct for 12-hour RVDs (Walsh and Loomis, 1986).

\$2.2 billion and a benefit-cost ratio of approximately 10.0 to 20.0. Figure 1 indicates that when benefits exceed costs by such large amounts, output is likely to be much less than optimum. On this basis, the Forest Service recreation budget appears certain to have been to the left of OA, with potential output of recreation opportunities and net benefits not being realized. Apparently, the government could have increased the welfare of society by allocating more resources to the Forest Service recreation program in the early 1980's.

Table 1 summarizes existing evidence on the contribution of recreation and park programs to national economic development in 1982. Although the studies report values that are biased downward, the total estimated benefits exceed agency expenditures by several times. Of course, these annual expenditures include some intergovernmental transfers and capital investments which would be treated differently than annual operation and maintenance costs. Also, the recreation use of state parks and other recreation sites may omit most of the hunting and fishing use primarily on private land where the wildlife is managed by the states. As a result, state recreation programs may be substantially understated. In addition, municipal and county recreation programs may be overestimated since their output is a residual estimate. Private outdoor recreation was estimated as 3.5 billion recreation visitor days in 1982, much of which is wildlife related.

There has been a notable lack of knowledge about some recreation activities. Often they are important with millions of activity days per year. Despite their obvious importance, their contribution to national economic development has not been studied. Resources have not been available to study most of the urban recreation activities such as participation in outdoor sports, jogging, golf, etc. Also there have been very few studies of the net economic value of wildlife observation, visiting beaches, winter sports, organized camps, and camping at private campgrounds.

Environmental Protection Benefits

Recently, economists have begun to estimate the total contribution of recreation resources to national economic development. Included in the "total value" concept are the: (1) di-

rect consumption benefits of on-site recreation; and (2) indirect consumption of (a) the flow of information about these activities and resources consumed as indoor recreation, and (b) preservation benefits, i.e., willingness of citizens to pay for the knowledge that recreation resources are protected (option, existence, and bequest values). This knowledge may be experience-based or education-based. Individuals either have visited recreation sites (direct use) or they have learned about them (indirect use). Based on this knowledge, individuals report a willingness to pay an amount roughly equal to the dollar value of that satisfaction rather than forego it (Boyle and Bishop 1985; Brookshire et al. 1982; Desvousges et al. 1983; Randall et al. 1974; Walsh, et al. 1978, 1984, 1985).

The preservation value hypothesis appears to be related to an insight by Clawson and Knetsch (1966). They suggest that the total consumption of outdoor recreation is more than the on-site recreation activity. The authors define the outdoor recreation experience to include five phases: anticipation, travel to the site, on-site recreation activity, return travel, and recollection. The anticipation phase would include the option value of possible future recreation use. The recollection phase would include both the existence value of knowing that the recreation resource is protected and the bequest value of endowing future generations with the resource.

Attempts to measure the proportion of the population who consume preservation values of recreation resources find a substantial majority of citizens throughout the United States report that they do so. This is the case for unique recreation resources such as the Grand Canyon (Brookshire et al. 1982) and wilderness areas (Walsh et al. 1984). For less unique recreation resources with regional rather than national significance, the proportion of the population who hold preservation values appears to be a declining function of the distance that they live from the resource (Sutherland and Walsh 1985). In addition, there are important differences among the three types of preservation values. Option value appears to be positively related to income and the probability of direct use of recreation resources. It is negatively related to the availability of substitutes. Indications are that existence value is related to altruistic motivations of individuals to preserve natural scenery and ecosystems. Also, it is related to the knowledge gained from direct use of recreation sites. Studies have shown that

bequest values are higher for retired persons who, motivated by benevolence, receive satisfaction from the interpersonal transfer of recreation resources to future generations. Apparently, all income groups value existence and bequest demands approximately equally.

The "total value" concept represents an important direction for future research. Recreation economics has traditionally focused on the benefits of recreation use. Although I am also interested in such benefits, my concern here is to illustrate a way to measure the preservation benefits to the general public. Data were obtained from a household survey designed to represent the population of the state of Colorado. Personal interviews were conducted in the homes of a subsample of 198 households in 1983. The results show the benefits of recreation and resource protection programs to users and to the general public. The survey design was based on the federal guidelines (U.S. Water Resources Council 1983). The interagency committee recommended use of the contingent valuation method in recreation and environmental benefit studies. Thus, the research method should be acceptable and the results of this pilot study useful in future research designed to assist actual policy making by public decision makers.

Figure 2 provides some tentative evidence as to the allocation of total benefits between recreation use and resource protection. For example, the pilot study suggests that recreation use benefits account for only about one-third of the total benefits from the construction and maintenance of recreation facilities. This suggests that user fees should recover only about one-third of the costs of their construction and maintenance. The general public, including both users and nonusers, apparently is willing to pay about two-thirds of the costs of recreation facilities from general taxes. Most people receive satisfaction from knowing that public recreation facilities are available and in good condition. Their motivations for payment include the option of possibly using the facilities in the future, the knowledge that they exist, and that they will be available to future generations.

Clearly, the quality of environmental resources contributes to the benefits of recreation. Figure 2 shows for one state the recreation use portion of the total benefits of resource protection programs. Direct recreation benefits accounted for slightly more than 30% of total willingness to pay for six important

environmental resource programs. The lowest recreation use benefits, as a proportion of total benefits, was reported for wilderness areas (25%). They also had the largest proportion of existence value and bequest value, reflecting the benefits to the general public of protecting unique natural environments. The highest recreation use benefits, as a proportion of total benefits, were reported for air quality (40%) which also had the lowest proportion of existence value and bequest value. This may be related to the importance of sightseeing recreation activity and appreciation of the scenic vista with good air quality. Also, air quality contributes to user satisfaction from all recreation activities, especially the physically active outdoor sports.

The pilot study suggests that households were willing to pay, on average, a total of \$145 per year for the recreation use value of the seven resources. This includes \$18 per year to construct and maintain facilities at recreation sites located in the states where they live. However, the largest proportion of total recreation use benefit was attributed to programs that protect the quality of environmental resources such as the air, water,

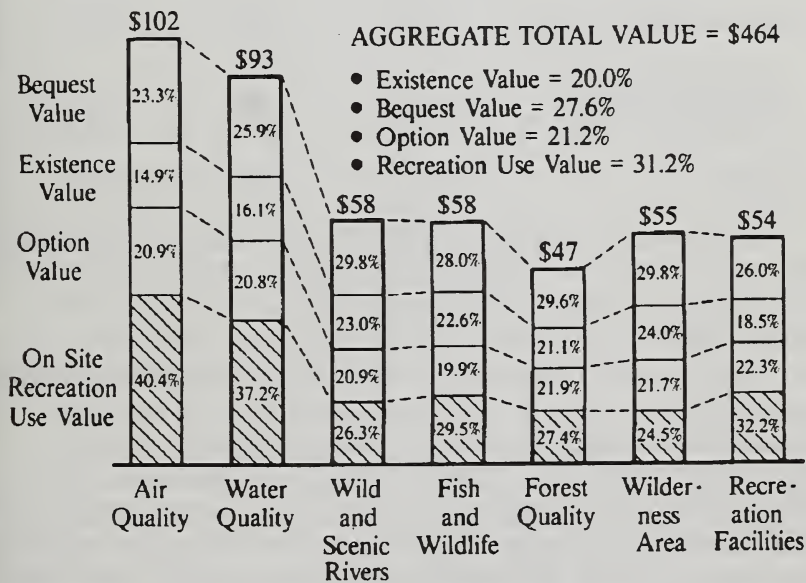


Figure 2.—Average annual willingness to pay per household for recreation use and environmental protection programs in the state of Colorado. Source: Walsh (1986).

forest, fish, and wildlife. These annual household values are summarized as the following:

	Recreation use value	Public preservation value	Total
Recreation facilities	\$18	\$36	\$54
Environmental protection programs	\$127	\$283	\$410
Total	\$145	\$319	\$464

With approximately 85 million households in the United States, the pilot study suggests a willingness to pay \$12.3 billion per year for the recreation use value of the seven resources. Of this amount, \$1.5 billion would be for recreation facilities and \$10.8 billion for protection of environmental quality in the states where they reside. These total U.S. values, in billion dollars per year, are summarized below:

	Recreation use value	Public preservation value	Total
Recreation Facilities	\$1.5	\$3.1	\$4.6
Environmental Protection Programs	\$10.8	\$24.0	\$34.8
Total	\$12.3	\$27.1	\$39.4

This comparison leaves out the benefits of the operation and maintenance costs of recreation programs to users and the general public. Even so, it illustrates the need to distinguish the recreation user benefits of facility management from the user benefits of the natural characteristics of recreation sites and other areas in the surrounding forest that are managed under other environmental protection or multiple-use programs. Examples of the former include campgrounds, swimming beaches, boating sites, and a portion of access roads and trails. Examples of the latter include reforestation, fire protection, insect control, soil conservation, water quality, and wildlife habitat management.

The values reported should be considered first approximations subject to improvement with further research. No ap-

proach provides the actual benefits associated with environmental quality. All empirical methods provide estimates limited by their respective assumptions. It is important to acknowledge that judgment affects the CVM approach: in the questionnaire design, data analysis, and in the specification of a decision model. The findings of this study could, however, be of use in the preparation of Regulatory Impact Analyses mandated by Executive Order 12291, to compare benefits and costs, particularly if the results were replicated in larger, more detailed surveys using a sample more geographically representative of the U.S. population.

There are two additional points that should be made about this study. First, there may be psychological values associated with recreation resources that exceed the economic measure of values reported here. The demand for protection of recreation resources, and therefore the economic benefit estimate, is constrained by limited consumer income, availability of leisure time, and other variables. However, psychological values may not be so constrained, i.e., satisfaction from recreation use and preservation may be worth more than people are willing and able to pay. Second, there may be long-run ecological values of protecting recreation resources that are not included here. It is difficult for biologists to predict what these might be, let alone measure and incorporate them into psychological and economic value. For this reason, it seems that economic values represent a conservative estimate of the total benefits to society from protecting recreation resources. The inability of economics to place a dollar value on unknown ecological values should be recognized in making decisions about recreation and environmental protection programs.

Conclusions

Attempts to estimate the net economic values of recreation and environmental protection suffer from fragmentation. No one agency can afford to fund such studies, and few agencies have the expertise to analyze large amounts of data. In addition, many important recreation activities, such as nonconsumptive use of wildlife, are overlooked while other activities like deer hunting are continually studied. There is little or no effort by federal and state agencies to use their existing data,

such as campground fee receipts or wilderness permits, to regularly estimate the net economic value of recreation.

The National Recreation Survey formerly performed by the Bureau of Outdoor Recreation and the Heritage Conservation and Recreation Service (now performed by the National Parks Service) should be augmented to collect more detailed data on consumption of recreation at site specific locations. Emphasis on urban recreation is particularly important. Contingent valuation questions should be asked about willingness to pay to visit local parks.

The National Survey of Fishing, Hunting and Wildlife Associated Recreation should ask more questions related to net economic value and reduce the detailed questions on expenditures for equipment. Sample size should be increased to improve accuracy. The survey should ask more location specific information about trips taken for nonconsumptive use of wildlife. Contingent valuation questions should be asked about nonconsumptive use of wildlife. This would help reduce the very large gaps in our knowledge of economic values.

To facilitate federal and state agency collection and analysis of data on net economic values, a national interagency center should be established. It should be staffed by experts in recreation resource valuation from the National Park Service, Bureau of Reclamation, Bureau of Land Management, Army Corps of Engineers, Fish and Wildlife Service, Soil Conservation Service, National Marine Fisheries Service, Environmental Protection Agency, and Forest Service. In addition to these federal agencies, representatives should be included from state recreation and park departments and state fish and game departments.

This staff could provide survey design and data analysis capability for state, federal, city, and county agencies that individually cannot fund surveys and analyze data. The National Center would realize economies of scale in survey design and data analysis that would provide all agencies with consistently estimated values of recreation and environmental protection. This Center could also train agency personnel in the interpretation and use of net economic values in benefit cost analysis.

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245

Implementation of the Recommendations of the President's Commission on Americans Outdoors

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At the 1986 SAF Convention, part of the technical session program of the Recreation Working Group was devoted to the progress and implications of the soon-to-be-concluded President's Commission on Americans Outdoors (PCAO). Today, the work of the PCAO is complete, its report has been published, and that commission has been disbanded. The PCAO was created to conduct an 18-month study to determine what the people of America want in terms of outdoor recreation and to recommend measures for providing resources and facilities to support these activities.

This paper attempts to provide a summary of the commission's findings and recommendations. It also provides an overview of the genesis of the commission and subsequent organizations. Finally, some of the potential implications that are likely to emerge as a result of the commission's findings and recommendations are discussed.

To begin an overview of the beginnings of the PCAO, it is necessary to first review its primary antecedent—the Outdoor Recreation Review Commission (ORRRC) of 1958-1962. ORRRC provided an all-encompassing view of American outdoor recreation supply, demand, and policy concerns (Knudson 1980). Established by Congressional action (P.L. 85-470), the commission was a 15-member panel consisting of 8 members of Congress and 7 private citizens. Two U.S. Senators and two Representatives from each major political party were selected by the respective heads of their chambers to serve. The President appointed the seven private citizens. Laurance S. Rockefeller served as commission chairman.

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From a base of information compiled largely through contract research studies, the principal finding in the 1962 report was that the supply of America's outdoor recreation resources had not, in the past, and would not, in the future, keep pace with the population's demand for outdoor recreation opportunities. A burgeoning demand for recreation was being fueled by increasing population, income, leisure time, and mobility.

Bold and imaginative steps were taken by the commission to solve this unbalanced equation. These steps have proven to be major shapers of outdoor recreation policy in the United States in the past quarter century as they have helped define the role of the federal government in the provision of outdoor recreation. The major results of ORRRC included: (1) the establishment of a federal Bureau of Outdoor Recreation; (2) creation of the Land and Water Conservation Fund (LWCF) which provided monies for land acquisition; and (3) designation of a national system of wilderness, wild and scenic rivers, and trails.

Perhaps the most notable outgrowth was the establishment of the LWCF in 1965. The LWCF is the primary source of funding for acquiring new federal recreation lands. It is also a major source of funding for state agencies as well. Funds are granted to states on a 50-50 matching basis for land acquisition, planning, and facility development for outdoor recreation (Siehl 1987). States are allotted up to 60% of the amount of the fund during any one fiscal year. The formula for allocation is primarily based on population and the amount of federal land within a state. The remainder of the fund is apportioned to U.S. Forest Service, Park Service, Fish and Wildlife Service, and Bureau of Land Management. By far the largest single user of the federal portion of the fund is the National Park Service. According to Knudson (1980:421), the Park Service has "spent more than two-thirds of the federal share." He cites three reasons for this. One, the Forest Service receives funds for land acquisition under the Weeks Act. Two, the Fish and Wildlife Service obtains some acquisition monies from the Migratory Bird Conservation Act. Finally, the BLM has not been actively engaged in acquisition of recreation lands.

The requirements established by the ORRRC for state participation in LWCF brought about unprecedented change in the way state outdoor recreation was provided. The main requirement for state participation was a completed comprehensive plan for outdoor recreation opportunities. All states now have

plans conforming to the ORRRC and are eligible for LWCF monies.

For a majority of the states, it was the first time that any comprehensive plan for providing recreation opportunities had been done. All told, more than \$6 billion (\$3 billion in federal funds matched by state and local or private contributions) has been appropriated through the LWCF, while 31,000 state projects have been funded around the nation (Siehl 1987).

The Case for a New ORRRC

The momentum generated by the ORRRC maintained strength throughout the 1970's. Much of the environmental legislation enacted during this time was positively affected by the commission's report. Outdoor recreation and conservation continued to be high priorities on the national agenda. However, the momentum that led to expansion of recreation opportunities in the United States began to weaken in the 1980's, as a result of tough economic times and a new Presidential administration. In 1981, Ronald Reagan introduced to the Nation his policy of "New Federalism." Where the federal government had previously assumed an active role in protecting resources, the Reagan administration advocated "recovering commodity values" from the public lands (Siehl 1987). Where previous administrations sought to increase outdoor recreation opportunities through park expansion, the Reagan administration opposed new acquisitions. Appropriation levels of the LWCF also declined. Although appropriation levels for the LWCF began to decline in the Carter administration, they declined further during the Reagan administration. Appropriation levels of the LWCF reached a peak of \$805 million in 1978. In 1982, appropriations fell to under \$180 million with no provision for state grants. For fiscal year 1987, \$188 million was appropriated. The 1988 budget calls for \$59 million—exclusively for federal use.

Policy analysts have cited the dramatic gains in acquiring new parks and wilderness from the National Parks and Recreation Act (1978) and the Alaska National Interest Lands Conservation Act (1981) as the major reason for retrenchment in land acquisition.

As well as retrenchment in the area of funding, former Interior Department Secretary James Watt dismantled the Heritage Conservation and Recreation Service (formerly the Bureau of Outdoor Recreation). The responsibilities of this agency were transferred to National Park Service personnel within the Interior Department.

Accompanying changes on the political scene that affected outdoor recreation were changes on other fronts in American society. People were becoming "increasingly concerned about their health and fitness, taking shorter but more frequent vacations, and seeking recreation closer to home" (Siehl 1987).

The private sector was providing a much-expanded share of recreation opportunities. A recreation industry had developed which provided new equipment for rock climbing, rappelling, windsurfing, and whitewater rafting—opportunities not nearly as popular at the time of the ORRRC report (Pritchard 1987).

Though actual figures are not available, most recent estimates (those provided by the PCAO report) show that spending by Americans on leisure-time pursuits totals about \$300 billion per year.

To many, these and other changes had obvious implications for outdoor recreation. Twenty years had gone by since the ORRRC had submitted its recommendations and made its projections. And by 1980, many of these predictions, such as increases in demand, had been surpassed (McGowan 1987). Other variables, such as new technologies, a growing private sector, the changing face of American values, and social demography, as well as new political climates created the need to reexamine the state of outdoor recreation in the United States.

Several conservation and recreation interest groups, such as the American Forestry Association, American Recreation Coalition, and the National Recreation and Park Association, initiated a move to examine the implications of the changes which had occurred. These groups felt that a national reassessment of outdoor recreation in America was needed. They and others associated with outdoor recreation urged Rockefeller, ORRC chairman, to assemble a group of individuals to undertake a study of the current status of outdoor recreation and to document trends and changes that had occurred since the 1962 assessment. The group addressed three questions in particular:

1. What changes in the demand for outdoor recreation opportunities have occurred over the last 20 years?

2. What changes in the supply of outdoor recreation opportunities have occurred over the last 20 years?
3. What adjustments in the outdoor recreation system are needed in the light of changes in supply and demand?

Eight major findings resulted from this study:

1. The two decades since ORRRC have been a period of great social and economic change.
2. Changes in how and where we live, work, and play have had a profound effect on outdoor recreation.
3. Despite the changes over the past 20 years, or perhaps because of them, outdoor recreation is more important in American life than it was in 1962.
4. Governments in general are doing less for outdoor recreation than is required to meet the need.
5. The role of the federal government needs to be reassessed, redefined, and revived.
6. The private sector is providing more outdoor recreation than it did 20 years ago; it could do even more with government cooperation.
7. There are ways in which outdoor recreation could be provided to meet increased demands which would not require huge public expense.
8. There is a need for improved information as the basis for outdoor recreation planning and management.²

In view of these conclusions, the group recommended a "new and hard look at outdoor recreation policy." They strongly urged Congress to create "a new bipartisan commission, on the model of ORRRC, to re-examine nationwide the problems and opportunities associated with recreation" (Siehl 1985). Though the new commission was expected to be mod-

²The complete findings and recommendations are in the report *Outdoor Recreation for America 1983* published by Resources for the Future, Washington, D.C.

eled after ORRRC, it was to be much broader in scope. It should address overlaps of outdoor and indoor recreation, the relationship between outdoor recreation, and, the group stated, "job satisfaction and productivity, family and social cohesion." The group also suggested the new commission include urban recreation and environmental quality issues as these relate to outdoor recreation.

Efforts to establish a new outdoor recreation review commission got underway in the 98th Congress. On April 19, 1983, Senator Malcolm Wallop (R-Wyoming), along with 27 co-sponsors, introduced S. 1090, a bill to establish a national outdoor recreation review commission (Siehl 1985). On April 28, 1983, Morris Udall and two co-sponsors introduced the House version of S. 1090, H.R. 2837. Hearings were held on the Senate bill by the Senate Committee on Governmental Affairs starting June 28, 1983. Revisions by the committee included increasing the size of the proposed commission from 15 to 21 members. Wording describing the interests and organizations to be represented on the advisory council was changed to include academics with special knowledge of "leisure, recreation, natural resources and the environment" (Siehl 1985).

After such changes, the bill was referred to the Committee on Energy and Natural Resources and was passed favorably with some refinements. One noteworthy change was the emphasis placed on outdoor recreation in both urban and non-urban areas.

When the measure was favorably reported from the committee for a floor vote, it passed unanimously on November 18, 1983. The bill was sent to the House of Representatives where it had received overwhelming support. Over 100 co-sponsors had signed on with Congressmen Udall in sponsoring H.R. 2837.

In the House, the bill was referred to the Committee on Interior and Insular Affairs. Hearings were held before the Subcommittee on Public Lands and National Parks. On April 12 and 24, 1984, hearings for administration and public witnesses were held. A third day of hearings was held later in August for governors and their representatives. No further action was taken. The bill died in committee at the end of the 98th Congress. (Some attribute the failure of the bill to make it through the House to House Democrats. Speculation is that Democratic congresspersons did not want to give the Republicans any ad-

vantages in the upcoming Congressional election, since Republicans had made gains in both the House and Senate in the two previous elections.)

Creation of the New ORRRC

Despite the unsuccessful attempts by the Congress, President Reagan revived the issue on January 28, 1985, when, by Executive Order, he created a Presidential Commission on Outdoor Recreation Resources Review. What many had hoped Congress would do, the President seized the initiative and did. Some who were skeptical of a Presidential commission feared that the President would appoint a commission which would mirror his views on natural resource issues.

The Executive Order was revised and re-issued on August 15, 1987, and the name of the commission was changed to the President's Commission on Americans Outdoors. The 15 members of the commission were also named. The commission members are listed at the end of this paper. Tennessee Governor Lamar Alexander, a widely-respected Republican, was named chairman. Gilbert Grosvenor, President of the National Geographic Society, was named vice-chairman. The commission was given an 18-month period in which to complete its work.

PCAO Organization and Operation

Although the PCAO was modeled on the ORRRC, the structure of the PCAO was much different from its predecessor. Only four members of Congress were selected to serve on the PCAO while eight had served on the ORRRC. Bipartisanship was maintained. The eleven remaining members were volunteers from the public and private sector.

The commission was assisted by a panel of 20 senior advisors. The panel provided expertise in areas where the commission members were deficient, such as special populations, wildlife, and tourism issues. Staff for the commission was provided by federal outdoor recreation agencies. The ORRRC report, a more ambitious undertaking, was "supplemented by a formal advisory council consisting of 15 liaison officers from

federal agencies having outdoor recreation responsibilities and 25 private citizens providing geographic and interest group representation" (Siehl 1987).

While the base of information for the ORRRC study was generated through contract research studies, the PCAO took a different approach. Information was derived from a number of different sources, but for the most part, the major source of information was the American people. Over 20 public hearings were held in different locales around the nation. Also, Market Opinion Research, a marketing research consulting firm, was contracted to poll Americans on outdoor recreation activities and preferences. Individual states were also requested to prepare assessments of outdoor recreation locally. Some 37 states responded by creating state outdoor recreation commissions. The commission invited those unable to attend public hearings to submit "concept papers" to express their views. These papers were very brief—about five pages—presenting an idea and discussing its merits as well as demerits. Several conferences and informal seminars also generated information for the commission. Senator Malcolm Wallop, a commission member and member of the Senate Committee on Energy and Natural Resources, and Derrick Crandall, another commission member and president of the American Recreation Coalition, co-sponsored a conference on recreational use of private lands. The PCAO joined the U.S. Conference of Mayors and the City of Baltimore in sponsoring a conference on urban recreation. Commission members, on an individual basis, also sought input and information from key recreation, conservation, and natural resource organizations from across the country. The commission also utilized case studies that showed how actual problems in recreation provision were resolved.

PCAO Findings

President Reagan charged the commission with reviewing "existing public outdoor recreation policies programs and opportunities provided by the federal government, state and local governments and private organizations and entities" (from Executive Order 12503). He requested "recommendations for policies and programs to assure adequate outdoor recreation opportunities for Americans into the next century." In this he

stressed "fiscal economy" in meeting future outdoor recreation needs, admonishing the commission to "assess the budgetary and regulatory cost increases or cost saving" of its findings and recommendations (Siehl 1987:7). The commission submitted an executive summary of its findings on December 31, 1986.

Findings and Recommendations

The commission sent its final report to President Reagan on January 28, 1987. Titled "American Outdoors: The Legacy, The Challenge," the final report contained complete findings and spelled out 66 recommendations on how to enhance the provision of recreation opportunities and outlined a "new" national policy on outdoor recreation. The adjective "new" underscores the fact that the commission found the present policy deficient. The federal government could do more to protect vulnerable resources, purchase open space, and to provide national leadership according to the commission. Among the findings in the report were:

- There is need for continuing federal financial assistance in some amount and on an assured basis.
- Primary needs for funds at the state level and local level are for the care and restoration of existing resources, especially built facilities, and for new protection and acquisition of open space.
- There is a need for clear identification of roles among public and private sectors to determine who is responsible for doing what in providing recreation opportunities.
- Leadership and common voice on recreation issues is needed.
- There is a need to provide recognition of the benefits of recreation so that it receives fair funding and programmatic consideration by elected officials and agency managers.
- Data on recreation resources, participation, spending, and trends are incomplete, inconsistent, and often incompatible from agency to agency.

Some feared that the commission report would provide a document to support administration policies regarding outdoor recreation and resource protection. These skeptics were quite surprised to find a report that actually echoed their own viewpoints. Paul Pritchard, President of the National Parks and Conservation Association, had this to say about the commission findings: "Many of the commission's findings come as no great surprise. Yet they provide documentation and support for ideas conservationists have been advocating for years. In some cases they are a welcome repudiation of current administration policy toward parks and recreation" (Pritchard 1987:11).

Major recommendations made by the commission include:

- The LWCF should be succeeded by a dedicated trust—providing a minimum of \$1 billion a year—to help pay for federal, state, and local land acquisition, and state and local facility development and rehabilitation. Congress should consider creating an endowed trust which, over time, would be self-sustaining.³
- Communities should establish greenways, corridors of private and recreation lands and waters, to provide people with access to open spaces close to where they live and to link together the rural and urban spaces in the American landscape.
- A 2000 by 2000 Program, through local initiative, with state and federal support where appropriate, should protect 2000 river and stream segments by the year 2000. Cities and towns should clean up and revitalize their stream corridors. States should set up or enhance river protection programs to complement local action.
- A congressionally-authorized, private, nonprofit outdoor institution should stimulate grassroots leadership and promote innovation and excellence.

³Commissioners Wallop and Vucanovich will not support any fixed level of federal funding, given the state of the federal deficit; funding and the method of funding, they feel, should be justified in the annual budget process.

- Visitors fees at federal outdoor recreation areas should be collected to supplement annual funding.
- Local and state governments should create a system of scenic byways, composed of scenic roadways and thoroughfares throughout the nation, and take action to protect these resources.
- Partnerships should be formed among private sectors for profit and nonprofit entities and public agencies to enhance recreation resources, services, and facilities.
- Strong local, state, and federal environmental quality law, regulations, and policies should be strictly enforced. Recreation should be explicitly recognized as a beneficiary of clear air, clean water, pleasing landscapes, and abundant and diverse wildlife.
- Each geographic community and community of interest should develop an outdoor ethic and work toward reflecting that ethic in personal and organizational actions.
- Local officials, mayors, governors, and private sector managers should support volunteering, develop incentives, and remove barriers to encourage Americans to volunteer in outdoor recreation. The goal is to double volunteer efforts in conservation and recreation by the year 2000.
- Increased cooperative efforts among private, local, state, and federal interests should be created to protect and enhance wetlands.
- States and the federal government should compile and publish annual reports on the State of the Outdoors that describe the condition of our natural resources for recreation.
- Private sector, government, and academic interests should work jointly to establish a National Recreation Accounts network to facilitate collection, analysis, and sharing of statistical data and information.

Some Implications

The task given to the PCAO has been completed. What exists is a document pointing the way toward enhancing outdoor recreation opportunities into the 21st century. At the moment, the PCAO report is only a document. Will it serve as combustible fuel igniting a "prairie fire" of concern and action? Or will it merely stand as a document of principle?

Before commenting on these questions, again it is appropriate to look retrospectively at the 1962 ORRRC report and its outcomes. In particular, it is important to focus on the political and social climate in which many of the ORRRC recommendations were implemented. The differences between the political and social environment of the 1960's and now may give clues to how expediently the PCAO recommendations are addressed.

Viewing the impressive list of legislative accomplishments following the 1962 report, George Siehl noted:

They came in an era of active federal legislation regarding natural resources and the beginning of a similar era for environmental legislation. It was an era when active federal involvement and funding were generally regarded by the public as an appropriate, effective means of resolving many social and economic problems.

At that time, there was a broad consensus among policy makers about the need for a strong federal role in the provision of outdoor recreation and among the population at large as well. Problems were identified and immediately resolved. Quite a different environment exists today. According to Gallup and Harris polls cited by Siehl (1987:12), Americans have "less confidence" in the federal government than they did some 20 years ago and now view "big government" less favorably than they did some 20 years ago.

The degree of cooperation among policy makers, outdoor recreation interest groups, and others with influence is also a factor to be considered. As mentioned earlier, when the PCAO was formed, it was tainted with controversy. Most wanted it to be a congressionally-appointed commission, thereby being accountable to the Congress. And this form of commission seemed to have widespread support in both the House and Senate. While the Senate passed legislation to create the com-

mission, the House failed to pass the legislation out of committee. Another episode began when President Reagan took the initiative and created the commission by executive order.

At the completion of the PCAO report, another point of controversy centered on a lawsuit filed against the PCAO by the Center for the Defense of Free Enterprise for the National Inholders Association. The association claimed that the PCAO did not abide by federal open-meeting requirements. A U.S. District Court ruled against the association, stating that "...had ample opportunity to make its views heard during the many public hearings held by PCAO and that any procedural errors that could have been made would not have substantially changed the content of the report" (National Parks 1987, p. 6).

Despite the sources of controversy, some action is already underway in implementing some of the commission's recommendations. Legislation has been introduced in the Congress to reauthorize the LWCF for 25 years and raise its authorized appropriation level from \$900 million to \$1 billion annually. Senator Bennett Johnson of Louisiana is its main proponent. Representative Bruce Vento of Minnesota introduced H. R. 1320, which, in addition to reauthorizing the LWCF, calls for a National Park Service entrance fee program. A bill to create a conservation corps to provide conservation jobs to "economically disadvantaged and other youth" was introduced in the House by Representative Morris Udall of Arizona (Parks and Recreation 1987, p. 13). Two similar measures have been introduced by Representative Edward Roybal of California and Representative Joseph Gaydos of Pennsylvania.

Although some of these initiatives were introduced independently of the PCAO effort, they incorporate some of its recommendations. Further action may be slow in coming for reasons already cited and because of the time factor. Tom Williams, a staff person with the Senate Committee on Energy and Natural Resources (commenting at a NRPA session), feels that the next 5 to 10 years is the probable time-frame for any real action to occur.

Recommendations for Action

Up to this point, the past has been surveyed so that some clues about future action on the PCAO findings might be as-

certained; some of the findings and recommendations have also been briefly highlighted. Now the questions remain—what should we do? What should be our course of action, as individuals and as a collective body? The following points of action are offered for discussion as a means of improving the quality of outdoor recreation for this nation's citizens.

- First, we must be a national voice in support of those recommendations which directly affect us. We should join with other groups with common interests and values. In particular, we should ally ourselves with groups such as the National Park and Recreation Association (NRPA) and American Forestry Association (AFA) in efforts to achieve a source of stable funding for outdoor recreation.

One concrete step is for the Society of American Foresters' Recreation Working Group to pass a resolution and submit it to the SAF which calls upon the society to take a formal position regarding active support of establishing the \$1 billion trust fund.

- Second, we must assume a leadership role at the local level. We should work alongside local governments and civic groups to identify goals and develop strategies toward improving outdoor recreation opportunities. There is a great opportunity for us to promote PCAO through supplying information to local groups. This can be in the form of presenting programs to local service clubs, such as Rotary International, Kiwanis, Lions, Optimist Clubs, Chamber of Commerce, etc. We should be aggressive in seeking opportunities to increase the public's awareness of the issues. Use these opportunities to "turn up the music." And the music is that outdoor recreation resources, public and private, contribute greatly to our local and national economy and, more importantly, to improving the general welfare of people.
- Third, we must identify discrete items in the PCAO document to support and promote. Given the current political climate, "big ticket" items are not as attractive as some of the smaller, more practical items

found in the report. One area where we have already assumed leadership is training and educating natural resource professionals. As Wilbur LaPage stated, "There needs to be a stronger professional ethic emphasizing competency in skills, dedication to conservation, commitment to accountability, information and education responsibility, and a reduction of conflicts" (Douglas and O'Leary, in press). Another could be to educate and inform local governments and civic groups of the "greenways concept." Much of the responsibility for this recommendation is at the local level.

- Fourth, we must promote an "outdoor ethic." As pointed out at the 1986 SAF convention, the SAF is in a unique position to spearhead this effort. Having direct relationships with the natural resources puts us in a highly visible (and enviable) position to assume leadership in this area.
- Fifth, we must seek to elevate the position of outdoor recreation on multiple-purpose areas, and we must also elevate the position of outdoor recreation within our own organization.

The recreational value of many multiple-use areas equals or exceeds that of commodity values (Nelson 1982).

The SAF is considered one of the strongest professional organizations in the country. Although we have much in common as foresters, we have specialized personal and professional interests as shown by the diversity of our Working Groups, each one of which focuses on a central theme.

The theme of the SAF's Recreation Working Group is outdoor recreation. There is nothing on the national agenda today that is more relevant to our collective interests than what parts of the PCAO's recommendations become incorporated in American life and society. And nobody inside or outside the Society of American Foresters is going to be more concerned or better able to take up the torch than we ourselves.

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Science, Values, Control and Equity: Foundations of Multiple Use Resource Policy

John Wargo¹

Introduction

This paper explores the science and politics of national forest management, particularly the effects of planning on the production and distribution of U.S. national forest resources. The Forest Service was established with the primary purpose of professionally managing the nation's timber resources. There is little argument regarding the historical dominance of timber interests in Forest Service resource allocation decisions (Wilkinson and Anderson 1987). The organization's budget, distribution of staff expertise, and planning documents all demonstrate the relative importance of timber production particularly when compared with resources which do not have easily identifiable market values such as recreation, wilderness, wildlife, and water.

During the past three decades, Congress has adopted a diverse body of law which relies heavily on planning as a vehicle to encourage the Forest Service to elevate the importance of noncommodity resources in the Forest Service's land management decisions. The effect of these laws on the quality of analyses conducted by the Forest Service has been extraordinary (Shands 1986). Enormous volumes of data have been generated, new analytical methods designed, elaborate plans constructed, and, perhaps most importantly, there is a heightened sensitivity among Forest Service employees concerning noncommodity values and their often inseparable relations to commodity management. Important methodological advances

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have been made valuing resources such as recreation and wildlife. Finally, patterns of participation in resource allocation decisionmaking have changed in response to the public involvement requirements of statutes such as the National Environmental Policy Act, the National Forest Management Act, and the Resources Planning Act.

Despite these innovations, by 1988 there appears to have been little significant shift in the traditional dominance of timber, minerals, and other commodity resources when compared with recreation, wilderness, wildlife, and water. A recent Congressional Research Service analysis, for example, suggests that the Forest Service deviated substantially from the recommendations of the 1980 RPA Program. While "high bound" production targets for timber and other commodities were largely exceeded, "high bound" production goals for recreation, wilderness, wildlife habitat, land acquisition, and human resources have consistently been unmet (Gorte 1986). The 1985 RPA Program was little different from its predecessor: short-term investments necessary to ensure long-term resource sustainability are deferred, a direction essentially the same as the 1980 Program rejected by Congress (Lyons and Knowles 1988).

The lesson is that scientifically-based planning does not seem to significantly influence the mix of resources produced on national forest lands. This paper explores possible underlying reasons: some lie embedded within the Forest Service, such as the choice of analytic methods, while others, such as the effect of the federal deficit on the budgetary process, or the influence of politically appointed executives within the Department of Agriculture, are "external" to the organization. Three trends are examined below which seem crucial to an understanding of the Forest Service's response to Congressional planning mandates: (1) expanding scientific knowledge, (2) evolving methods of outcome valuation, and (3) fragmentation of decision-making authority.

The Science of Multiple Use

The concept of sustainability underlies most renewable natural resource law. Biologists have traditionally thought of sustainability in terms of the survival requirements of genetic

resources, species, or ecosystems. Natural resource managers, particularly forest and game managers, tend to think of sustainability in terms of production levels: What level of harvest will ensure a sustained yield? A body of law has evolved over the past three decades which specifically asks this question for national forest resources.

The Multiple Use and Sustained Yield Act of 1960 (MUSYA)² promotes forest management practices which ensure a sustainable yield of timber and which do not diminish noncommodity resources. This law requires the Forest Service to afford "due consideration" to other forest-based resources such as recreation, water, wildlife, range, and fisheries in its management efforts.² The phrase "due consideration" is ambiguous and has been implemented by the Forest Service primarily through more intensive planning.

The accurate estimate of what level of cutting will ensure a sustainable yield of timber is also required by MUSYA. The Forest Service, by their own admission, has had some difficulty in achieving this goal, evidenced by their finding in 1974 that only one-third of cut-over land in Rocky Mountain National Forests were successfully regenerating (Wilkinson and Anderson 1987). Similarly, the Chief of the Forest Service recently admitted that the 1988 budget calls for the harvesting of more timber than is scientifically justifiable to ensure sustainable yields, given the low level of investment in reforestation and timber stand improvement (Robertson 1987). The reasons are likely less based upon the failures of scientific prediction than upon the politics of the budgetary process in concert with interest group pressure to gain access to commercially valuable timber stands. This leads one to question whether the thresholds of sustainability or "carrying capacity" are most commonly defined by scientific hypothesis-testing or by processes of social valuation (Burch 1984).

The National Environmental Policy Act of 1969 (NEPA) reinforces the planning requirements of the MUSYA by requiring the preparation of an Environmental Impact Statement for any federal action which could have a significant effect on the environment.³ One of the more interesting effects of NEPA has been to motivate the Forest Service to prepare detailed natural

²16 U.S.C. Sec. 528-531 (1982).

³P.L. No. 91-190, 83 Stat. 852 (1970) (codified as amended at 42 U.S.C. 5321-4370 (1982)).

resource inventories for each forest as part of their planning efforts. Soils, hydrology, timber, slope, wildlife, fisheries, and other resources have been mapped in an effort to provide a scientific foundation for the decisions which require tradeoffs between conflicting land uses, such as timber harvesting and endangered species protection (Wilkinson and Anderson 1987).

A third statute which has expanded scientific knowledge available for planning is the Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974.⁴ This statute requires the Forest Service to prepare three planning documents at regular intervals, all aggregated at the national level. It quickly became apparent that meeting the national planning requirements of RPA demanded a higher level of data consistency among national forests than had previously existed. RPA has had the additional effect of stimulating methodological advance in forecasting ecological and socio-economic effects of alternative land management strategies.

Amid growing controversy over Forest Service timber cutting practices, particularly the reasonableness of clearcutting, Congress in 1976 passed the National Forest Management Act (NFMA), carefully specifying ecological suitability criteria for timber harvesting.⁵ A second relevant provision of NFMA requires the Forest Service to "provide for diversity of plant and animal communities."⁶ Ostensibly, this requirement is designed to prevent our national forests from becoming single-species plantations while encouraging natural levels of ecological diversity and could be considered an important reduction in the administrative discretion of the Forest Service. Finally, NFMA requires the development of 10-year interdisciplinary forest plans for each of the 123 national forest administrative units. The planning process is forcing the integration of disciplinary knowledge from traditionally specialized fields such as economics, wildlife biology, forestry, hydrology, soil science, and forestry.

Each of the laws just described has had the effect of broadening the Forest Service's scientific knowledge. Fundamental resource inventories are crucial to estimations of sustainability required by MUSYA, estimates of environmental effects re-

⁴16 U.S.C. Sec. 1601-1610 (1982).

⁵16 U.S.C. Sec. 1604(g)(3)(E)(i-iii) (1982). This law originally passed as an amendment to the Resources Planning Act of 1974.

⁶16 U.S.C. Sec. 1604(g)(3)(B) (1982).

quired by NEPA, estimates of ecologically appropriate levels of harvest and levels of ecological diversity required by NFMA, and to planning efforts required by RPA.

Yet, inventories alone are insufficient to meet the predictive requirements of laws which demand forecasting of ecological sustainability in response to alternative levels of management. It is this necessity for prediction which places the greatest strain upon limited scientific evidence, often forcing technical experts to make uncomfortable judgments.

While policy-makers presume that scientists can easily establish ecological and human health thresholds of sustainability, scientists know differently. Ecology like medicine is a science which seeks to identify subtle interconnections, given limited evidence of direct cause and effect relationships. Seemingly insignificant stresses in one part of a complex living system at one point in time may affect distant components of that system perhaps far into the future.

The high level of complexity and naturally dynamic character of ecological systems make forecasting a tricky business. If there is one consistent lesson from the discipline of ecology, it is to expect the unexpected in system response and to lengthen rather than shorten the time horizon of concern.

For all of these reasons, the Forest Service began exploring the potential of computer models to reduce the complexity of developing a nationally aggregated resource management plan. A linear programming model known now as FORPLAN Version 2 has evolved over the past decade and is used to simulate optimal levels of resource production. This program helps national forest planners forecast the effects of shifting resource output targets, both spatially and temporally. Forest Service planners hope that eventually these shifts may be aggregated across forests so that a type of national accounting system is possible to simulate the National Forest System's response to alternative management strategies.

Criticisms of FORPLAN include: (a) the ability to hide assumptions; (b) the level of sophistication required to comprehend why a specific management action produced results which the computer found to be "optimal"; (c) many of the problems of managing dynamic ecosystems may not be linear in nature, making a linear modeling technique inappropriate (Iverson and Alston 1986); (d) since many resources are not commonly traded on commodity markets, we do not have re-

liable measures of their value which frustrates any attempt to make computerized tradeoffs; (e) the quality of ecological forecasts is highly dependent upon the quality of the science which produces the data employed; and (f) there is currently no simple method to incorporate and track scientific uncertainty associated with numerous data and assumptions.

Yet, there are clearly some tangible benefits to formal mathematical modeling of complex systems. The primary value lies in forcing the modeler to contemplate the causal links, temporal lags, and feedback relationships among important variables. Simulations can be run and rerun based upon a variety of assumptions to forecast system responses (see Meadows and Robinson 1985).

How should resource managers cope with this combination of limited scientific evidence and the statutory obligation to forecast effects far into the future? One answer lies in the formal characterization of scientific uncertainty: since the confidence of our estimates diminishes as we attempt to forecast effects further into the future, we must be exceptionally careful to identify the limitations of our current knowledge base and associated estimations. Assumptions and uncertainties are rarely explicit in most large computer models.

Brewer (1986) suggests that we should approach complex problems using modeling, simulation, and gaming. He presents an overview of these approaches which have their historical roots in the design of military strategies for contexts which are complex, uncertain, and dangerous. Playing "what if" games in a sequential process allows one to see more clearly the implications of behavioral responses to alternative system "conditions" (see Brewer and deLeon 1983). Wargo (1988) has adopted this approach to model uncertainty associated with risk estimates used to regulate agricultural chemicals. The complexity of the forest planning process seems ideally suited for the design of small scale modeling and a gaming approach to alternative futures estimation, while poorly suited to the type of linearized optimization modeling process which will naturally favor market-based methods of resource valuation and, therefore, commodity production.

In summary, the laws just described have had an enormously positive effect on the quality of knowledge available to Forest Service administrators responsible for planning future mixes of forest outputs. This expansion of knowledge has also

forced advances in data collection protocols, data management techniques, and methods of analysis. New positions created within the Forest Service to translate the data into policy have in effect institutionalized new expertise.

The simple collection of data, however, does not by itself ensure improvement in the accuracy of forecasts of sustainable resource production. More importantly, there may be a great disparity between the coefficients which modelers assign to value resources in computer programs and the values held by concerned and influential members of the public. Problems in this process of valuation are considered next.

Values: The Dilemma of Quantification

While the original intent of the National Forest System was largely to protect water supplies for urban residents and farmers, increasing demand for timber during this century has elevated and sustained its dominance over other forest-based resources, such as recreation and wildlife. The statutes described in the previous section reflect a shift in social values assigned to national forests. Congress has attempted to elevate the importance of biological diversity and sustainability, recreation, wilderness, and wildlife relative to commodities such as timber and minerals.

Value is most often defined in a comparative context, such as valuing alternative futures. Any specific choice then reflects a "preferred condition" (Driver and Peterson 1987). We tend to grasp the concept of value more easily when speaking of things or commodities such as board feet of timber or barrels of oil, for which there exist agreed upon monetary measures of relative worth. Valuing the more subjective characteristics of life including aesthetics, love, health, knowledge, or security is more difficult since the units of measure are not standardized. Although difficult to quantify, these qualities tend to distinguish a flourishing culture from one struggling to survive.

Few would attempt to quantify the value of their mate. Even if one were reasonably confident of capturing this "value" using shadow prices such as earning potential court awards for tort claims or insurance company actuarial charts, few would dispute that the price hardly reflects the richness of one's "value." Social scientists are developing more sophisticated

methods of valuation for qualities of life which we commonly think of as "priceless" or "invaluable," largely in response to formal demands to justify specific choices which require difficult tradeoffs. For example, we may use an individual's "marginal willingness to pay" for a day of backpacking in the wilderness as a reasoned reflection of the value of wilderness (to that individual for that period of time) so that recreational value may be compared to other commodity-based uses of forest land. Yet, the value of my lingering memories of camping beside a wilderness lake in the Northern Sierras far exceeds the \$76 I spent per day on gas, food, equipment, maps, and bug dope. In fact, as I gain experience, I recognize the extraordinary character of that trip and its value to me as a memory increases. And, as Burch (1987) has suggested, the most enduring value of outdoor recreation may lie in the formation and solidification of social bonds. (I have since married my backpacking companion.) Similarly, West (1987) urges us to consider the psychological family cohesion and status values of outdoor recreation, all difficult to quantify but essential components of most peoples' conceptions of a high quality of life.

One purpose of attempting to quantify the value of resources such as wilderness is clearly political: it enables non-commodity interests to compete more effectively with commodity interests in choice contexts.⁷ The assignment of imputed market values facilitates the analysis of tradeoff effects among multiple resources (see Sinden and Worrell 1979). This strategy is better than nothing yet remains defective in failing to capture a full sense of how we "value" natural systems.

This recognition led Driver et al. (1987) to distinguish between a "utility-based" and a "condition-based" approach to outcome valuation, defining a benefit as any "improved condition." The utility-based approach requires measurement of the monetary value of outcomes. The condition-based approach relies upon both monetary and nonmonetary units of measure, enhancing analytical and descriptive power in estimating magnitudes and distributions of gains and losses. This is truly innovative social science which may not lead to more comprehensible computer programs; however, it will facilitate a richer understanding of the "implications of our choices."

⁷*The Wilderness Society established an economic analysis unit several years ago which has since become very effective in evaluating the economic efficiency of diverse land management plans.*

We should recognize that we employ nonquantitative measures of value daily as we try to reach difficult decisions without comparable units of measure at hand. The mind may seek quantitative comparison, yet finding this often impossible, proceeds through some combination of rationality and intuition. Our biological parallel processors churn through enormous volumes of data and uncertainty, considering alternatives simultaneously, and we make a choice. One of the more interesting characteristics of decisionmaking is our tendency to assume that choices have a far higher level of finality than is realistic. Most choices are not irrevocable: we change jobs, houses, mates, and resource management plans with a regularity which suggests high levels of value complexity and dynamics.

This problem of commensurability among priced and unpriced values is particularly problematic for resource managers. For example, a national forest might be thought of as a cluster of ecosystems. Ecosystems are transformed into resources through the process of valuation (Burch 1971). Any one tract of forest might be valued in different ways by one or more individuals: it may be a wildlife resource to an ornithologist, a prime wilderness resource to a Sierra Club member, a timber resource to a commercial logger, or a critical water resource to urban dwellers several hundred miles away.

The process of rational choice among alternative mixes of diverse resources demands commensurability of values. The Forest Service released the 1985 Renewable Resources Program in which they have proposed two alternatives, a high bound and a low bound (USDA Forest Service 1986a). Binkley and Hagenstein (1987) analyze the efficiency of reallocating the Forest Service's budget among resources by moving from the low bound to the high bound estimates of output for each resource: timber, range, minerals, wilderness, recreation, water, and wildlife. They asked the question: Is it possible to achieve a higher output of benefits by shifting investments among programs without increasing the overall budget? This effort might be characterized as the pursuit of maximum economic efficiency. They conclude that budget reallocations should be made away from the inefficient range program and the marginal timber program and toward the minerals and noncommodity programs such as recreation, wilderness, water, and wildlife (Wilkinson and Anderson 1987). Binkley and Hagen-

stein demonstrate that the method of analysis chosen to compare values could strongly influence political choices among alternative mixes of resources.

This type of "value reallocation analysis" (my phrase) is precisely the type of inquiry necessary to make intelligent choices among competing uses, particularly if sensitivity analyses are incorporated to test the resilience of efficiency estimates to alternative levels of imputed market value. The utility of any substitution analysis is dependent upon the quality of the process of valuation. As Binkley and Hagenstein (1987) concede, there are clearly limits imposed by relying on imputed market values to estimate the value of noncommodity resources.

Conflict over appropriate mixes of board feet of timber, animal unit months, recreation visitor days, acre feet of water, and wilderness acreage has clearly been escalating in recent decades. This effect might simply be a response to perceived scarcity or increases in perceived value of individual resources. This pattern may also result, in part, from the relatively recent increase in formal organization and professionalism of noncommodity special interests, particularly in the areas of wilderness and wildlife.

The Forest Service might be thought of as a value broker, sitting in the pivotal position of a variety of possible exchange relationships among special interests. It is naive to assume that the Forest Service is a neutral value broker which will quickly respond to value shifts within its organizational environment. Shifting public perception of the diversity of values (in addition to timber) associated with national forests has led to intense conflict over the definition of an appropriate mix of value outputs or benefits, particularly between the Forest Service and those supporting increased protection of noncommodity resources.

Planning has sharpened our perception of the limitations associated with traditional methods of resource valuation. While great progress has been made by social scientists in developing innovative methods of resource valuation, significant problems of value additivity, value commensurability, and value dynamics remain. Quantitative approaches to valuation have traditionally favored commodity production, since market-derived units of measure have been thought to be most reliable. If we choose a computer program as our "value account-

ing system," the disadvantage of noncommodity interests is reinforced.⁸ The dilemma is this: increasing rationalization of the analytical process seems to adversely affect the perceived importance of resources which are difficult to quantify.

Planning as Authority Redistribution

Subtle distinctions among the terms control, power, authority, and property seem central to an understanding of the vulnerability of planning as a tool to mediate conflict over scarce resources. The following definitions are offered to avoid semantic confusion. Control is the effective regulation of behavior. Power, by contrast, is the ability to control behavior which may or may not be exercised. Authority is the right to control behavior and may be legitimated by law, tradition, and/or charisma, and commonly has associated obligations (Weber 1978). Finally, property is a type of authority which may be infinitely fragmented and distributed among combinations of individuals and groups. In this sense, property is not a thing but a set of social relationships which establish rights and obligations among competing interests with respect to valued and scarce resources.

Historically, scarcity seems to have been the primary motivation for the formal creation of property relationships. Any group which defines, allocates, and adjudicates property rights will be considered to be a "property regime." Political states, corporations, tribes, and clans are all types of property regimes which regulate access to scarce resources (Burch 1971, Wargo 1984, West 1975).

Using these definitions, the Forest Service might be thought of as a property regime which holds the authority to assign rights and obligations among interests competing for access to scarce forest resources. The Forest Service's multiple-use planning efforts constitute a type of zoning of public land resources. This planning process defines and distributes property rights to national forest resources among competing private

⁸This disadvantage seems to be directly related to the complexity of the model. Few of us have the resources or time to learn a complex linear program, let alone the effort required to run enough simulations to judge the mainframe computers and complex models concentrates power among experts, but can also result in a "revolution" constructed by those who feel disenfranchised.

interests. While fee simple rights are rarely privatized, private interests have succeeded in securing less-than-fee interests from the federal government, primarily in the form of lease agreements allowing specified levels of resource use. Managers of these resource agencies might be thought of as common property right brokers, planning to allocate rights among competing private interests.⁹

At any point in time, a specific pattern of property right distribution among public and private interests may be identified. The multiple-use planning process is the tool which Congress and the Forest Service have chosen to effect a redistribution of that pattern. The patterns' stability over time seems to be related to the magnitude of benefit shifts which would be effected by redistribution efforts (i.e., the larger the shift in benefits, the more difficult it will be to effect the change). Property right stability also seems to be related to the political influence of those holding the rights at any point in time: it is much easier to disenfranchise those with no influence.¹⁰

Unfortunately, planning is a process which may be controlled by interests currently in power. Control may be maintained or gained in numerous ways: by the design of data collection protocols; by choice of methods of data analysis; by selection of possible alternatives; by choice of methods of valuing alternative output scenarios; and, perhaps most critically, by gaining access to those making the choices. Shifting the balance from commodity resource production to noncommodity resource preservation will require insulation of the planning process from traditional dominant commodity interests, both within and outside of the Forest Service.

The failure of planning to effect a significant redistribution of control over forest resources might be explained by the natural tension between two approaches to resource allocation: synoptic or comprehensive planning versus strategic decisionmaking, a tension identified by Lindblom (1977) as a fundamental distinguishing feature between planned and market-based economies.

⁹*There are obvious instances where the Forest Service is a broker of rights among other public interests such as municipalities which hold or desire water rights to streams and rivers under Forest Service jurisdiction.*

¹⁰*It may be no coincidence that the most rigorous private land zoning standards have been established in remote parts of the country such as the Adirondack Park in New York State, where year-round residents are politically disenfranchised.*

The synoptic approach requires an idealists' complement of knowledge, methods of comparative valuation, and uncanny forecasting ability to carefully plan the allocation of scarce resources far into the future. It relies heavily upon computer-based modeling to keep track of production volumes and schedules, and hopes to achieve a level of coordination among producers and consumers which achieves the most socially desirable mix of benefits, thereby maximizing social welfare (see Brewer and Asher 1988). It sounds a lot like the RPA process, as ideally envisioned by its initial drafters.

In response to the vulnerabilities of comprehensive planning, particularly limits in available analytical resources, Lindblom (1977) argues that we are forced to be more strategic. In a world of limited knowledge, unexpressed or highly dynamic values, inadequate or nonexistent analytical methods, and diverse conceptions of social welfare, we employ the strategy of making modest changes in behavior to achieve short-term increments in welfare. The strategic approach relieves an enormous analytical burden associated with synopsism, while setting the stage for later adjustments of policy following recognition of the failures of the initial choice.

The historical behavior of the Forest Service is clearly more strategic than synoptic. In response to more than a decade of intensive planning, the Forest Service has not significantly shifted mixes of resource production. The Forest Service Chief in 1987 presented the 1985 Recommended Renewable Resources Program (USDA Forest Service 1986b) before a House Subcommittee and was forced to justify support for the "low bound" alternative which emphasizes a high level of timber production in concert with a low level of investment in reforestation, recreation, timber stand improvements, land acquisition, and research:

The high bound represents what we think are wise investments, a good way to manage the National Forests, but the Forest Service is part of the Federal Government and the Federal Government has other priorities, and a Federal deficit problem. So when you...are trying to eliminate a \$200 billion deficit, it gets you down to looking at the low bound, which really is fairly realistic because our 1988 budget is actually at or near the low bound....It is kind of like a savings account. You invest in a savings account and you live off the interest. The

high bound would be living off a high level of interest and in the low bound we would be spending some of the savings account (Robertson 1987).

In this case, short-term strategic decisionmaking favors commodity production, while synoptic planning encourages the production of noncommodity resources and investments in long-term biological sustainability. Control over the production of diverse forest resources remains uninfluenced by sophisticated internal synoptic planning efforts. Strategic or incremental decisionmaking is forced by external control over the budgetary process.

In the previous sections, I have argued that neither an expansion of our knowledge base nor evolving methods of outcome valuation hold much promise for shifting patterns of resource outputs from national forests. Two opposing conceptions of sustainability seem to lie at the core of this failure. To professionals within the Forest Service, sustainability is defined by units of natural resource production. To the Office of Management and Budget, sustainability is defined by the immediate quantitative relationship between total federal revenues and expenditures, or in the case of specific agency programs, the existence of a positive marginal benefit/marginal cost ratio (see Sample 1988). The shift in control over production targets from professional resource managers within the Forest Service to federal budget examiners has clearly overshadowed the substantial biophysical and social science advances of the Forest Service within the past decade.

Conclusion: Equity and Resource Allocation

In an arena where land use behavior is governed less by science and more by the values and power of traditional controlling interests, the potential abuse of science and knowledge by the powerful is of great concern. Comprehension of the sources and magnitudes of scientific uncertainty embedded within estimates of alternative futures often translates directly into power. While our inventories of national forest resources have expanded dramatically over the past two decades, our analytic methods for interpreting data remain primitive. Scenario analyses such as those suggested by Brewer (1986) and

Wargo (1987) hold promise for the characterization of uncertainty and testing the sensitivity of limited data to alternative assumptions. Technological innovation in the design of microcomputers could facilitate much broader distribution of knowledge formerly accessible only to specialists in computer programming. Concentration of knowledge and analytical expertise within the Forest Service merely increases the potential for their domination by commodity elites.

Equity in value distribution has long been thought of as a fundamental goal of political organization particularly the pursuit of Bentham's and Pinchot's concept of the "greatest good." There are at least two problems in the pursuit of the "greatest good." First is the difficulty we have in coming to any consensus on how it should be defined. Since "good" is clearly a value-based term, we tend to fight over appropriate definitions of value and methods to measure it. Second, to achieve equity in value distribution we will need to move beyond questions of valuation and concern ourselves directly with special interest group power. Increasing the power of noncommodity interest groups will not be a simple prospect, particularly since it often implies decreasing the power of commodity interest groups. Equity, in this sense, requires a deliberate attempt to balance power relationships among diverse interest groups so that a sort of "mutual control" is achieved over the value distribution process (Dahl 1982).

Finally, equity of control over forest resources will never be achieved. Equity in control is a measure of the democratic character of the process. It is also a measure of the level of accountability of decisionmakers to the public they purportedly represent. We will never hold national referenda to determine the appropriate uses of specific national forests. What we can achieve is a higher degree of equity in ability to influence resource allocation decisions. Public participation in plan development and in the selection among alternative futures is an important mechanism to ensure higher levels of decisionmaker accountability. As Burch (1976) reminds us, the environmental movement might be interpreted as an attempt to effect a fundamental shift in participation rights in natural resource allocation decisions. We must struggle to make the planning process more than an exercise in rhetoric which rationalizes the choices of a powerful minority. The Office of Management and Budget clearly has a critical role to play in

reducing our federal budget deficit; however, their level of control over the professional judgments of the Forest Service is endangering the sustainability of our national forests and severely reducing the democratic character of governance.¹¹

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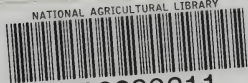
¹¹OMB control over agency rulemaking is enormous. EPA's proposals for pesticide tolerances, for example, are subject to cost-benefit analyses by OMB prior to promulgation, regardless of the fact that EPA's proposals are the direct result of professional risk-benefit judgments within the agency.

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